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THE JOURNAL
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Original Communications.

THE PREDICAMENT OF CROWN AND BRIDGE WORK.

By Dr. Forrest H. Orton, St. Paul, Minn.

(Read before the National Dental Association at Its Twentieth Annual Session, Louisville, Ky., July 25-28, 1916.)

INTROSPECTION which is simply self analysis is morbid. Introspection which starts out with the purpose of finding one's own absurdities with a view to rectifying them is not likely to be very mischievous and occasionally is as valuable to a group as to an individual—(for after all we are only you and I magnified and our mistakes as individuals make the errors of the community as surely as our achievements make a nation's success.) So if my remarks seem in the nature of destructive criticism it is because I feel that it is necessary to clear away the debris of our errors in the gross before beginning reconstruction.

It needs but a slight acquaintance with the periodical literature of our profession to realize that there is an increasingly critical trend toward crown and bridge work. From confidential talks with dentists in almost every section of the United States I am convinced that the average dentist is not only dissatisfied, but more or less discouraged with the results of his efforts in this field; and this is especially true of those dentists who have had years of experience.

Indeed, we did not need to be informed of our shortcomings. We were aware of them, and had been aware of them for years before they were discovered by others. But since popular attention has

been called by members of the medical profession to the serious systemic disturbances which it is claimed may follow from a large percentage of our work, we feel that we can no longer maintain the **status quo.** To be sure, our first reaction was probably one of resentment. I well remember my own indignation when, some fifteen years ago, Dr. Eugene Talbot expressed his opinion that we were doing our best to cause pyorrhea by our crown and bridge operations. But time has only too well justified his strictures. We all felt that we had been challenged, and that this was a serious commentary upon our claims as public benefactors; but the feebleness of our defense seemed to me almost a virtual acknowledgment of the accusation. We replied that the dental profession should not be judged by the cases under observation, and that there were men in the dental profession who were doing hygienic crown and bridge work. I do not doubt that this is true, for I have seen some such work. But is not this, after all, mere quibbling? For we must acknowledge that these men are the exception, and that they are possessed of unusual native talent; this talent, combined with long experience, has developed in them something akin to genius. Alas, the profession as a whole is not made of geniuses! The average man who enters the dental profession scarcely does so because he has an impressible call, based on an unmistakable talent, but simply as a way of earning his livelihood, and to the beginner, apparently an easy way.

That unfavorable prophylactic conditions are established in the mouth as a result of a large percentage of our crown and bridge operations must be familiar to any one having the slightest clinical experience. We are all more or less convinced of the necessity for improvement. Shall we wait for this before we are forced to it by popular disapproval? We must face the difficulty of the problem squarely if we are to preserve this important branch of restorative dentistry.

I thoroly believe that the average dentist is both willing and anxious to do whatever is necessary to be successful in the best sense of that word. He wants to be fair, not only to himself but also to his patient, but his great difficulty is that he is not able to obtain the knowledge needed to do the right kind of work. There is no recognized authority, no authorized opinion, either in college or in text. The dentist has acquired the mechanical technic of a certain type of crown and bridge work, but his knowledge is empirical. Mechanical ingenuity and excellence of craftsmanship have been his sole aim—the only part of the work seeming worthy of attention. In the absence of any recognized standard of criticism he forms his own standard, and this, as a rule, is one of expediency. He faces the temptation to look upon every mouth mutilated by the loss of one or more teeth as an opportunity of placing a piece of bridge-work, which he feels will be to his own material advantage.

While I am a firm believer that "the laborer is worthy of his hire," I do not believe that material gain should be the guiding thought of one who dedicates his life to our profession. The opportunity to be of service to one's fellow-man should be the principal privilege and reward as commercial gain is the privilege and reward of one who dedicates himself to business. A man who goes into dentistry solely for his own benefit is not a credit to himself or his profession, while he who looks upon his work as a part of the whole profession of healing finds both pleasure and reward in his work. Why should we less than other benefactors in the world look upon our work as an art and science instead of mere business? Why not realize that the greatest end of all endeavor should be not to be ministered unto but to minister. Only when we have this high aim shall we hear less of the ordinary

"I can't afford to do that kind of work" as well as less criticism of what we do accomplish.

And while no branch of dentistry can boast of a greater variety of methods than the one under discussion in this paper, the absence of any fundamental principles governing their application make the selection of any particular method a matter of personal caprice. Some methods, indeed, may evince a more accurate technic than others; but if the principles underlying our technic are sound, the method itself is largely a matter of individual preference and prescription.

It may not be out of place to raise here the question whether indeed the dental profession is really in the possession of any well organized body of recognized principles relating to crown and bridge work. The restoration of the teeth by means of a filling or inlay is an operative procedure whose principles have become thoroly systemized, classified and standardized that the best form is no longer a matter of conjecture. We all understand the importance of restoring contour, contact, and the proper form of embrasure, but what standards are there relating to crown and bridge work which have found a correspondingly general recognition? Fully forty per cent of the dentist's work today is in this field, yet if we were asked to criticise a piece of crown and bridge work in a clinic what standard could we apply? Would any two of us view it from the same standpoint or seek to measure it by the same test? I fear that we are too often wanting in any fixed standard, and therefore too prone to be dazzled by the brilliant polish of the finish—as satisfied as the patient himself, to whom the brilliancy of the finish is not only the crowning test but the test of the crown. As I look back upon my own many failures, the ignorance of fundamental principles seems to me to be their main cause. We have studied individual cases, but have not systematized our deductions. We have no generalizations which, when brought together into system, would make a theory upon which to work; all our theories are but concrete instances. No amount of mechanical ingenuity or manual dexterity, for example, will compensate for the failure to make a proper diagnosis. The often repeated aphorism of medical science, "that to know the cause is half the treatment" is a truism which does not too strongly emphasize the importance of making a correct diagnosis.

In the absence of a manual of principles we must base our diagnosis on individual judgment. We judge by comparison. Hence, only men of experience can be expected to have judgment—what, then, can we expect of a beginner? Experience is a dear teacher, and yet is the one upon which we must rely. It would be idle to deny that individuals have accomplished something—often, indeed, a great deal, but they have accomplished it only as individuals. Their work does not help the science unless it can be given in such form as to be adapted to a number of cases. Each one who obtains any results in this field laboriously works out for himself his own theory. The thought has been many times driven home to my mind that under proper guidance, using the discoveries of my contemporaries or of those who have preceded me, it would have been easy for me to have acquired years ago more than that which I have painfully and imperfectly learned by my own experience alone.

We are told, for example, to make study models; but we are not told what to study after we obtain such models. Had we a definite classification, sufficiently comprehensive to embrace all the various types of malocclusion which almost invariably result from the loss of one or more teeth, then the making of study models would enable us to diagnose a case and aid us in the decision of a definite treatment for each type of malocclusion so comprehended. Study

models would then become as important a factor in the routine of crown and bridge work as they are at present to the orthodontist. No orthodontist of today, no matter how extensive his experience or great his ability, would decide on a plan of treatment without first making study models.

Let us define bridge work as a method of correcting malocclusion in a mutilated

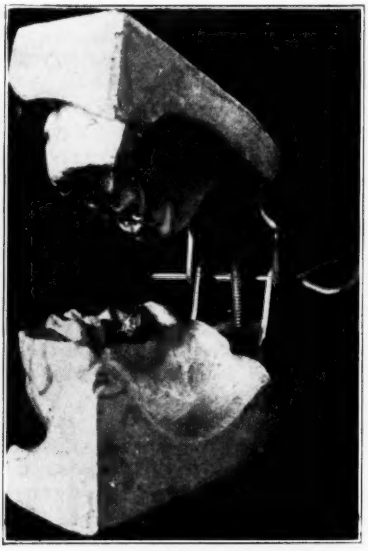


Figure 1.

arch caused by the loss of one or more teeth. If we accept this definition a knowledge of normal occlusion must be regarded as a first principle, the simple basic fundamental requirement. Because of the orthodontist's special fitness to judge of the knowledge of occlusion possessed by the average dentist I have discussed this question with a great many orthodontists and have discovered at least one bond of harmony among them, for they all agree without exception that dentists generally have a very hazy notion of normal occlusion.

Now let us define diagnosis as "the art of discriminating between diseases or deformities and distinguishing them by their characteristic signs and symptoms." All such judgments imply a comparison with the normal. The value of study models as an aid to diagnosis would depend upon the dentist's knowledge of normal-occlusion; lacking this fundamental knowledge it would probably be more instructive for him to make study models of his crown and bridge cases after they were inserted in the mouth. If such models were carefully made and correctly mounted on an anatomical articulator I think he would be chagrined to learn that while his bridges occluded with the opposing teeth when the jaw was closed, they failed to do so during the masticatory movements of the jaw. The fact that the crown or bridge occludes, is no evidence that it will articulate perfectly, and yet a flawless articulation is in my opinion the most important feature in determining the stability of our work. Articulation of the teeth is one of nature's most marvelous creations. It is the object for which teeth were developed and this arrangement of the teeth seems to be the fittest possible for its purpose, for it has survived from the Heidelberg man to the present day with comparatively insignificant changes. This subject has been treated so exhaustively by previous writers that it would seem almost trite for me to dwell upon it at length, were it not for the fact that a practical application of the known laws which govern the temporo-maxillary articulation are utterly ignored by the average dentist in his crown and bridge work. Furthermore, I am inclined to believe, from the earnestness with which this subject is received wherever it is presented, that this is due to a lack of understanding rather than to indifference. I fully recognize the sweeping nature of this statement, but no better proof of its truth need be presented than the present method of constructing crowns and bridges from an

impression and bite which represent only a segment of the arch and the opposing teeth. (Figure 1.) While this might serve as a guide to the occlusion of the teeth while at rest, it does not convey the slightest hint as to how we should arrange the occlusial surfaces in order to make them articulate. That fixed bridge work immobilizes the teeth has been urged as one of the chief objections to the fixed crown and bridge. I am of the opinion that this is a minor factor, and not to be compared in importance with the common failure to reproduce the bucco-lingual inclined planes of the occlusial surface.

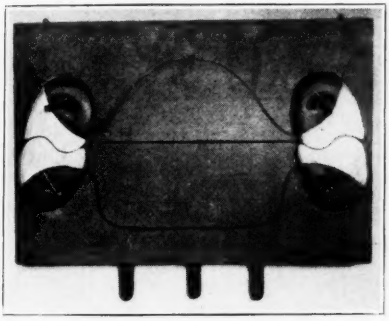


Figure 2.

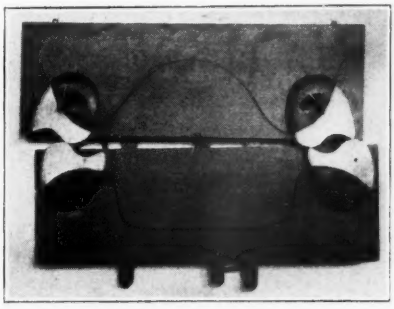


Figure 3.

Buccal and lingual cusps on a level plane as they are usually made might serve, if the occlusial of the teeth were directed by a hinge or if the jaws moved laterally in a straight line, but owing to the inclination of the condoloid path when the jaw moves to the right it is lowered on the left vice versa. Owing to the slight inclination of the molar teeth there is a correspondingly slight deviation of their long axis from the perpendicular line. As a rule the molars of the upper jaw are a little inclined toward the buccal and the corresponding teeth of the lower jaw will have a slight lingual inclination. The result is that the buccal cusps of the upper teeth will be a trifle shorter than the lingual, and the buccal cusps of the lower teeth will present cusps a trifle higher than the lingual. When this arrangement of the teeth is in harmony with the plane of the temporo-maxillary articulation, the lowering of the jaw on either line is compensated for, and the stress is evenly distributed. A more graphic representation may perhaps be gained by illustrating my meaning with the use of Dr. O. H. Weiss' apparatus designed by him for showing lateral articulation. (Figure 2.) With the teeth in normal occlusion and arranged as described, when the jaw moves either to the right or the left there is an occlusial contact on both sides of the arch and an equal distribution of the stress. (Figure 3.) When the jaw moves to the right or the left the long buccal cusps of the lower teeth oppose the long lingual cusps of the upper teeth and thus compensate for the lowering of the jaw on the left side owing to the inclination of the condoloid path but the cusps placed on a level plane (Figure 4) when the jaw moves either to the right or to the left there will be occlusal contact on one side only. (Figure 5.)

It is not an uncommon fault to see this inclined plane actually reversed on the upper teeth by making the buccal cusps longer than the lingual. I believe that this fault will account for more broken

facing than any other factor, for with the teeth properly articulated it is almost impossible to bring stress to bear against the facing. If the only result of our failure to harmonize the occlusial surface of the teeth with the plane of the condoloid path were to impair the masticating efficiency of the teeth this fault would not be so grave, but the malocclusion produces results in destroying the attachment of the teeth used as piers.

The effect of this condition may frequently be noticed on the natural teeth

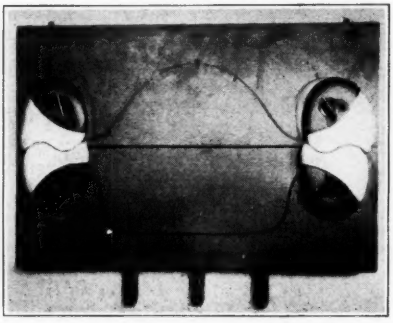


Figure 4.

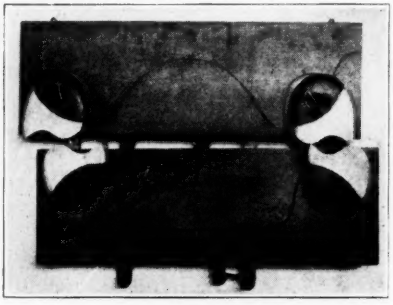


Figure 5.

owing to a nervous habit of grating the teeth or to the natural abrasion which accompanies old age where the greater wear comes on the lingual cusps of the upper teeth and the buccal cusps of the lower, to the extent of reversing the planes of the occlusial surface. Here a type of malocclusion is produced which invariably results in the resorbtion of the alveolar process, the recession of the gums, and the consequent increased range of movement of the teeth.

It has been a matter of surprise to me that in the voluminous literature on the subject of pyorrhea comparatively little attention has been paid to this important etiological factor.

The possibility of studying the two arches as a unit is in my opinion the most important reason for making study models. The opportunity to observe the changes which almost invariably take place in the opposing tooth from loss of function; the changes in other parts of the arch which may have been caused by the loss of the very teeth we contemplate replacing and which may be a deciding factor in our diagnosis; the opportunity to educate the patient as to the far reaching results of the loss of one or more teeth from the arch by the use of such excellent illustrative material as this visual image of his own mouth presents, should not be neglected. And I might say in passing that the education of the dentist himself will be extended.

It is well to remember that we cannot do all our compromising on one jaw. The attempt to adjust the occlusal surface of our bridge to an elongated tooth on the opposite jaw is sure to result in a malocclusion far more serious to the elongated tooth than the grinding necessary to bring it into the occlusial plane. The traditional sentiment which makes us hesitate to mutilate a so-called "perfectly good tooth" is a misplaced emotion in this instance. The tooth may be a sound tooth but it is not a good tooth until it is made to function normally. A single tooth is not of much value in itself but may be regarded as valuable just in proportion as it contributes to the welfare of the entire arch.

To refer again to the prevailing prac-

tice of completing our crowns and bridges entirely on a model—while the various anatomical articulators on the market may approximate the temporo-maxillary articulation with sufficient accuracy to form an efficient guide in the

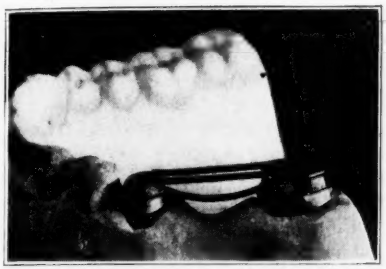


Figure 6.

construction of an artificial denture, in our crown and bridge operations something better than mere approximation is necessary. We must remember that we are held accountable for the pathologic se-

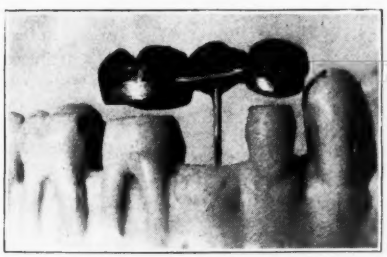


Figure 7.

quence that may follow malocclusion. Owing to the rigidity of a crown or bridge and the increased stress of mastication on bridge abutments we must restore articulation without a flaw, in order to avoid the evil consequences of malocclusion.

While it is not my intention to exploit any particular method I might be accused of iconoclasm did I not attempt to replace the goods I have destroyed. I shall throw on the screen illustrations of a method suggested by Dr. Alfred Pagankopf of St. Paul, which makes it possible to try the waxed-up and assembled model of the bridge in the mouth without danger of distortion. The articulation as well as the occlusion may thus be ver-

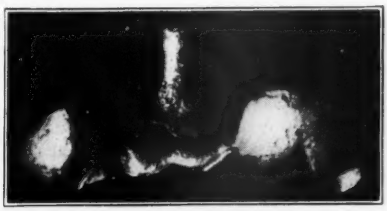


Figure 8.

ified by using the jaw itself as an articulator. (Figures 6, 7, 8 and 9.)

We have all met the humilating experience of having to grind down a carefully carved occlusial surface until nothing was left of the cusp sulcus and fissures but the Ogee curve itself, but since

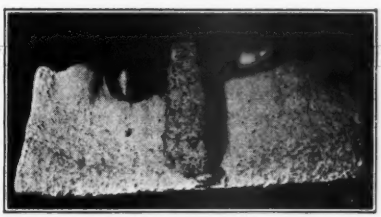


Figure 9.

adopting this method I have practically eliminated this annoyance.

But the occlusion of the teeth is by no means the only result we must obtain in producing favorable conditions. Nowhere in nature does one cause produce a given effect, but a multitude of causes, direct and indirect, contribute to produce it.

The problem before us presents many difficulties apparently unrelated, but just in proportion as we are capable of rec-

ognizing and estimating the value of each of these factors and their relation to one another, our diagnosis may be raised from an empirical to a scientific art.

That an unfavorable or abnormal form of the tooth may be a predisposing factor in caries and gingivitis is now a well recognized fact; our attention has been repeatedly called to the importance of maintaining the proper form and width of the interproximate space and the marble-like contact; we realize the importance of the embrasures in extending the areas of immunity by allowing the excursions of food stuffs to pass thru during mastication—these are concrete illustrations, presenting the possibility of favorable as well as unfavorable variations in the shape of the teeth themselves. Modern operative dentistry has come to recognize in the extension-form given to our cavity preparation and the contouring of the finished filling the importance of restoring the exact surface anatomy of each tooth, and to emphasize as a fundamental principle, the requirement that each operation ought to be so devised as to prevent recurrence of decay or injury to the soft tissue. These are all recognized consequences of the fundamental principle that the operation is incomplete or unsuccessful if it does not leave the mouth in the most favorable condition possible.

That the same principles have an equal application to crown and bridge work is too self-evident to need comment, and yet the conventionalized crown in popular use does not resemble the natural tooth in a single essential. The pathological condition of the soft tissue about a large percentage of our crowns, and the utter disregard of the surface anatomy of the tooth, resulting in the production of unfavorable conditions (favoring the lodgment of secretions and stagnant saliva) are the result of our neglect to take advantage of the guidance afforded by these principles. Might it not be reasonable to inquire just here the cause for this? The dental profession, individually and collectively, is as capable of deductive reasoning as are the individuals of any other group or profession. There may be many answers to our query, but in my opinion, the chief reason will be found in the failure to acquire an intimate acquaintance with dental anatomy

"To the rational being it is the same thing to act according to nature and according to reason."

Perfect execution depends upon a clear perception of the object to be copied or restored—an ability to recall a clear visual image in the mind's eye. In restorative operations my means of malleted filling or inlay, there is always some portion of the tooth left, to act as a guide; but in our crown operations we must restore the crown of the tooth in its entirety. We must reproduce nature exactly as we find her, and the perfection of our imitation will depend absolutely upon our knowledge of dental anatomy. Notwithstanding the fact that this subject forms one of the foundation stones of our education, it is my experience that students generally fail to realize its importance, and hence fail to take advantage of the opportunities it offers. In fact, a book knowledge of the subject sufficient to pass the didactic test and forgotten as soon as this trial is over, is about the sum total of the average dentist's knowledge of dental anatomy.

So thoroly am I convinced of the dependence of the subject under discussion upon dental anatomy, that I cannot see much hope for an improvement along this line until we first increase our acquaintance with this science. I hope that I may be pardoned for uttering a word of warning just here. I believe that dental anatomy, as taught in the majority of our colleges, is as a rule as well presented as the limited time—two semesters of the freshmen year—will allow. But the student at this time is merely on the threshold of dentistry, and his orientation in the subject is limited; he cannot be expected to understand the specific relation which the subject bears to the prac-

tice of dentistry, and he regards it as more or less of a cultural study; or possibly, a filler put in to round out the curriculum.

Now if this subject were repeated in the first semester of the junior year from the standpoint of applied anatomy, it would have the effect not only of deepening the groove of memory by review, but it would further impress the student with the fact that every line in the tooth has an important bearing upon the establishment of favorable conditions.

Figure 10.

Figure 11.

In estimating the practical value of general anatomy teachers have come to emphasize the importance of regional anatomy, and I believe that the student, and hence the profession, would profit by this experience, and that the viewpoint gained would be as valuable to the dentist as it is to the general surgeon.

That the whole is made up of all its parts is as true in dental anatomy as in mathematics, and it is no more true that one may not understand the condition and treatment indicated in any case without a full knowledge of regional anatomy than that one may not be an architect without a knowledge of geometry.

Let us turn now from generalities to a few specific features of dental anatomy, whose bearing on the subject of crown and bridge work has engaged my personal attention. To those of us who still believe that a banded crown is occasionally indicated, a knowledge of the relation of the enamel and the dentine to the contour of the crown is essential. For example, in the preparation of the root for the reception of the crown the question comes up whether the removal of the enamel will be sufficient to give us parallel walls, or whether the dentine shall make up part of the contour of the crown. Altho this question has been answered in a former paper, I consider that the material is so pertinent to the present discussion that I am justified in quoting it.

A description of the relative proportion of the tooth enclosed by each tissue will, I think, be convincing on this point. (Figures 10, 11, 12 and 13, showing relative portion of tooth occupied by enamel and dentine.) The contour of the tooth is made up almost entirely by the enamel. Beginning at the gingival line with a beveled feather edge, it gradually increases in thickness until the points of the cusps are reached where the thickest enamel is

found. This accounts for the loss of color at the incisal, as the tooth receives its principal hue from the dentine and

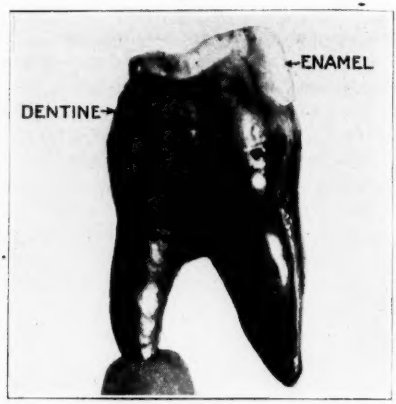
Figure 12.

its white, or white and gray, value from the enamel. The enamel will be found thickest beneath any ridges or eleva-

Figure 13.

tions on the various surfaces. This thickness of the enamel is formed by the increased convexity of the outer surface, (Figure 14) the dento-enamel junction or axial wall of the dentine, passing toward the occlusal surface with little or no convexity and only a slight inclination toward the axial line of the tooth.

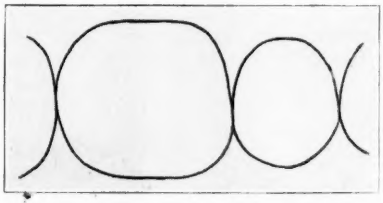
Figure 14.



Upper molar partially stripped of its enamel, showing inclination of axial walls of dentine.

Now if the anatomical description just given is accurate, the necessity for the entire removal of the enamel seems obvious, if we are to have our crown in close

Figure 15.



Diagrammatic outline of the first lower molar and second bicuspid in the region of the approximate contact as viewed from the occlusial.

contiguity with the entire gingival circumference of the gingival line of the tooth. The most difficult feature in the technic of constructing the banded crown, and the distinguishing requirement of this type of crown, is the removal and replacement of the gingival enamel.

Let us study the regional anatomy of

this portion of the tooth, directing our attention to the shape of the enamel on this portion of the tooth where the difficulty of reproducing normal conditions by the use of a flat band is made clear. (Figure 15.) These slides show portions of a lower first molar and lower bicuspid somewhat in detail. If we view from the occlusal aspect

Figure 16.

this outline of the lower molar, the mesial surface is not convex from the buccal to lingual, as it is usually represented in our crowns, but is inclined slightly toward the axial line of the tooth as it goes toward the lingual, bringing the contact point almost on a line with the buccal cusps, thus resulting

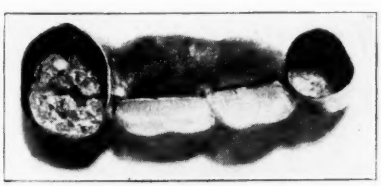


Figure 17.

in a larger lingual than buccal embrasure; on the other hand, the distal surface is convex from buccal to lingual, bringing the contact point nearer the center of the tooth. Not only the cleansing action caused by the excursion of the food stuff, but the retention of stagnant saliva is determined to a large extent by the width and form of these embrasures. This is true not only of individual crowns, but in the so-called hygienic fixed bridge as well, it is a common fault to find the dummies at the point where they are attached to the abutment crowns, as wide bucco-lingually as at any other point, giving one good reason why fixed bridge work is considered unhygienic. This slide illustrates the fault I have described. (Figures 16 and 17.)

This slide shows the proper form to

Figure 18.

be given the dummies at this point. (Figures 18 and 19.)

The form of embrasure is dependent to a large extent upon the form of the buccal and lingual surfaces. (Figure 20.) In this slide, the dark line is intended to show the outline form of the buccal, occlusal and lingual surfaces usually em-

Figure 19.

ployed. The objection to this form is that it carries the occlusal third out of alignment, prevents a proper formation of the embrasures and allows the excursion of the food stuff to be forced against and under the free gum margin. The dotted line shows the natural form and the one which should be followed in order to produce the most favorable conditions.

In each of these cases (Figures 4 A

and 6 A) the crowns have been ground down to the free gum margin. Notice the difference in the outline

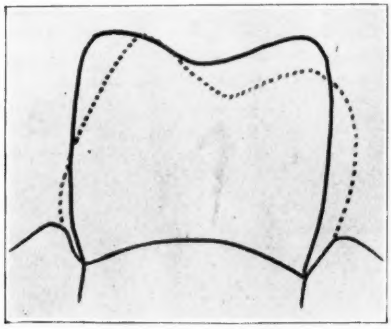


Figure 20.

form of the dento-enamel junction and the periphery of the crown at this point. Now the outline form of the dento-en-

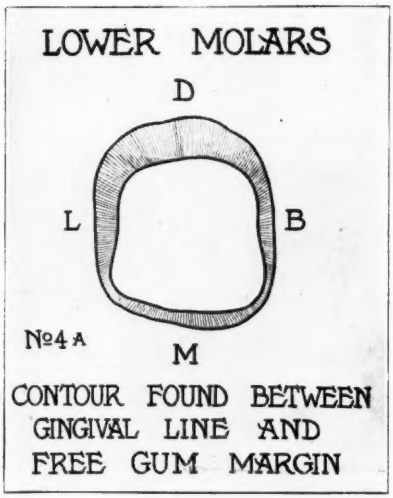


Figure 4 A.

amel junction at this point, is practically the same as the outline form at the gingival line. The varying degrees of thickness of the enamel on this portion of the tooth are about as constant as are any other features of dental anatomy, and form an important consideration in restoring the enamel contour. The gums should hug the crown as closely as they did the natural tooth. It is also interesting to note in this slide (Figure 21.) (which is a view obtained by simply cutting off the distal convexity of the root preparation) that the enamel passes

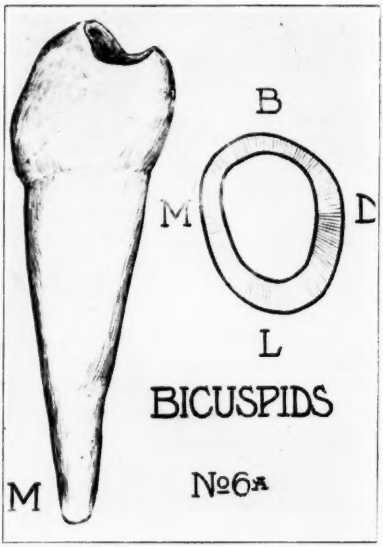


Figure 6 A.

higher on the lingual than upon the buccal, and that in this slide, (Figure 22) (a view from the buccal of a longitudinal section passing from the points of proximate contact) it passes higher on the distal than upon the mesial—important anatomical points to remember in trimming and festooning the gingival end of the band.

Altho the anatomical relations just described are chiefly applicable in the construction of a banded crown, let it be understood that they are not given with any especial desire to advocate this particular type of crown. I simply wish

to emphasize the fact that if we are to continue making the banded crown, certain fundamental reforms are necessary before it can hope to rank with other modern septic dental procedures. In my opinion its application should be limited to those cases where it is possible to prepare the root not only without injury to the peridental attachment but also without injury to the inner epithelial lining of the free gum margin. As I have indicated elsewhere, I do not believe that

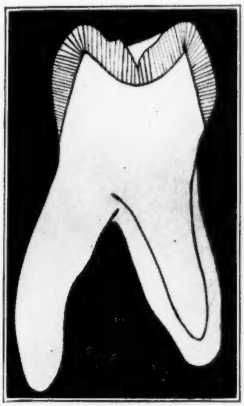


Figure 21.

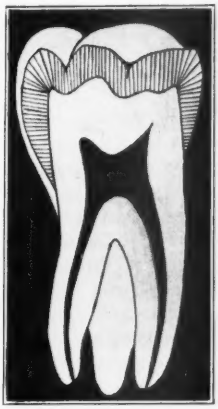


Figure 22.

the dental profession can be accused of indifference to the results of their work, and hence we must admit, judging from the lack of respect often shown the gingival and sub-gingival tissues during a root preparation, that the vulnerable nature of these tissues is not fully understood. I believe that the detachment method of teaching the histology of the soft tissue surrounding the teeth may in a measure account for our failure to appreciate their relation to the tooth.

While the free gum margin is variable, the exact nature of its attachment to the tooth forms an important diagnostic sign for the indication of a banded crown. For example, where the free gum margin extends over the enamel of the crown upwards of three mm., a condition frequently found in youth, we may expect the peridental fibers to be attached to the cementum clear up to the gingival line. Any attempt to remove the enamel as high up as the gingival line, would result in destroying these fibers, many of which turn up into the free gum margin and help to hold the margin tightly against the enamel; and in the interproximate space, fibers pass from the cementum of the tooth and above the alveolar septum and are attached to the cementum of the adjacent tooth. Furthermore, the epithelium lining the border of the gingiva is folded in against the tooth and is much thinner and softer than the epithelium covering the outer portion of the gums. In making our diagnosis, the fact of even greater importance is that the portion of the connecting periostimum and peridental membrane in immediate conjunction with the tooth, is not covered by the epithelium. In other words, there is no attachment of the epithelium to the root of the tooth and it is suspected that infection frequently takes place thru this unprotected region.

On the other hand, it is a well-known

clinical fact that the peridental membrane and gingival margin recede as age advances, thus favoring the possibility of a harmless removal of the enamel, hence the location of the gum line may be taken as a significant factor in de-

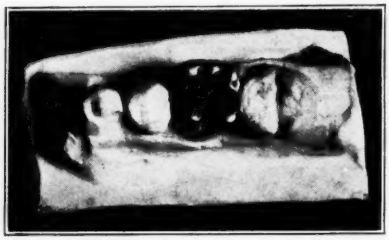


Figure 23.

ciding upon the type of crown indicated in any given case.

It would be vain for me to attempt to add to the many exhaustive descriptions of the proximate surfaces of the teeth, or to emphasize the importance of reproducing the most favorable shape possible as a prophylactic measure, except to say that the reproduction of a normal form of embrasure is only second in im-

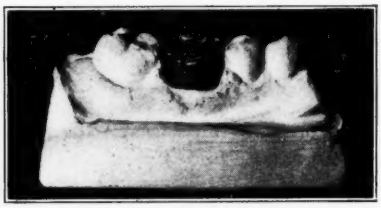


Figure 24.

portance to the contact form itself, if indeed the shape and position of the proximate contact are not dependent to a certain extent upon the form given to the embrasures. My meaning may possibly be made more clear by comparing the following slides. (Figures 23, 24 and 25.) They represent the conventional crown first lower molar viewed from the occlusal, the buccal and the mesial aspect, and these slides represent a crown made to replace the one just shown and viewed

Figure 25.

from the same aspect. (Figures 26, 27, and 28.)

While I have but touched upon a few

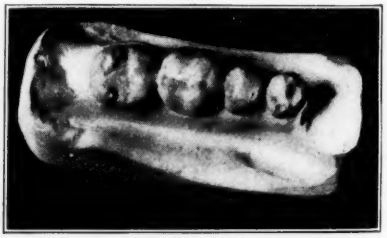


Figure 26.

of the anatomical points which have a bearing on the production of favorable conditions, I hope that the illustrations which have been shown you in this address are sufficient clearly to indicate the practical value of applied and regional anatomy. In addition to the present method of memorizing a number of disconnected facts, let us emphasize the

connection between facts, to show how each is related to the other, and how thru them all there runs a certain thread of unity, which may frequently

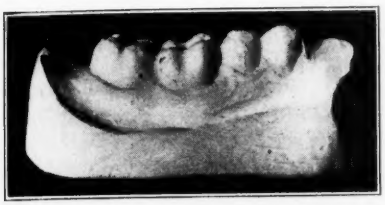


Figure 27.

be formulated as a general principle of law. When this has been accomplished in the field of crown and bridge work, when we have thus obtained objective and accessible standards for criticism,

Figure 28.

we may perhaps be able to boast of good and hygienic work done by the profession as a whole, instead of finding such work exemplified only in exceptional instances of unusual ability; and we may be able to require even of the beginner, with ordinary preparation and talent, a reasonable conformity with the well-established standards of the profession as a whole.

Thru the centuries they have been regarded as worthy of reverence who follow the call of conscience to save men's souls, and the medical profession is looked upon as almost on a level with the ministry; for the temple of the soul must be worthy of its inhabitant, and he who saves life saves the most precious thing within human power to save. We have long known the connection existing between health of body and the possession of sound, sanitary teeth; of late years the medical profession has blazoned it forth to the world, so that there is no one today but understands that medicine and dentistry are as closely allied as medicine and surgery. It is not our own fault, then, if our profession is considered less important and dignified than these others, and is it not ours to put it upon an equal plane?

Discussions.

J. M. Prime, D. D. S., Omaha, Nebraska.

Mr. Chairman, Ladies and Gentlemen:

The Chairman says I have but five minutes. I never had so much to say with so little time in which to say it. I am sorry I have so little time to discuss this splendid essay coming from a scientific man like Doctor Orton on a subject in which we are all so much interested. So I can but touch on one or two points.

I would like to emphasize what the essayist says in regard to the inefficiency of crown and bridge work. It is an accepted fact that in a few cases, few, very few, we see creditable work; yet the great majority of cases are monuments erected to the memory of our mistakes, ignorance and inabilities. The "Mother Hubbard" crown is perhaps the greatest sin for which we will have to answer. Along in the category would come the banded Richmond, devitalization of teeth for abutments and for cosmetic reasons and on down the line until we quake with fear at the thought of irreparable

damage done. The day for a more sane and sanitary, healthful and physiological system of crown and bridge work is here. Until such a system is worked out and tested we must employ it cautiously and in limited cases. (Applause). Nature designed the root should carry its individual crown only. In most forms of bridge work we ask the abutment teeth to not only do their work but also the work of their departed fellows. We have learned by experience they will do this extra work for a limited time only.

I was delighted to hear the essayist make prominent mention of tooth form. This is a subject to which I have given much thought. I have the honor to read an essay on the Physiological Function of Human Tooth form before a section of this Congress. Tooth form lies at the very foundation of every operation on the natural teeth. Without a knowledge of tooth form we are unable to render an efficient service. If I am called upon to make an operation on a tooth the degree of my success will be measured very largely by the natural form I give to that material with which I replace the lost tooth tissue. (Applause).

There are three fundamental principles involved in physiological tooth form. The first is the masticatory surface. Its function is the object for which the teeth were created. The second is, the lateral walls of the tooth crowns being so formed that their surfaces will be kept continuously cleansed by the excursions of food. The third and last and most important of all, for on the whole superstructure rests, is the gingival constriction. It provides shelter for the delicate gingival tissues, a harbor in which these tissues lie, allowing the excursions to pass over them, leaving them unharmed. Indeed, here is the most vulnerable spot in the whole human body, for it is at this particular place that the most prevalent disease of the human family finds its origin. (Applause).

My time is up but you will pardon me if I say one further word. When in bridge work where we ask the abutment teeth to do more than their natural duty, the occlusal form should receive our careful thought. The form of this surface governs very largely the degree of intermaxillary force. It is here, and perhaps more here than in any other operations, we are forced to depart from the natural forms. Indeed the more nearly we restore the natural forms in some cases, the greater the intermaxillary force and the sooner the abutments will be overworked and lost. We can therefore give a more enduring service by modifying our occlusal form, shortening our cusps and providing an easy sliding surface. We have different laws and principles involved in bridge work than on single crown teeth. Single crown teeth either in part or in whole require the most faithful tooth form reproduction.

I thank you very kindly. (Applause).

K. G. Knoche, D. D. S., Chicago, Ill.

Mr. Chairman, Dr. Orton, Members National Dental Association, Ladies and Gentlemen:

Dr. Orton's paper has placed this subject before you in a logical and very complete way. He has emphasized the need for certain reforms, the necessity for which is apparent, and lays emphasis upon the fact that unless these are inaugurated public disapproval will bring us to a very costly and sad accounting, to discuss his paper is but to agree with him, and I will try to reiterate much of what he has said and to emphasize the principles he has so clearly enunciated.

Self analysis or introspection is, as he has said, morbid, and much of the analysis of modern dentistry by men whose vision is but the small end of a microscope has given us a picture far too dark and far too unpromising. They have led the profession into believing that nothing in dentistry is good or right. This kind of introspection produces chaos and it makes men lose hold on ideals and all that brings about bet-

terment. The right sort of introspection is the kind that produces the effort you have just been benefited by. I feel that it marks the beginning of work that will bear fruit such as will bring the field of crown and bridge work into the position rightly its due.

It is significant that, as Dr. Orton has said, forty per cent of the dental operations performed are so-called crown and bridge operations, and so we as bridge workers are responsible for much of the success or failure of dental operations.

I do not need to dwell upon the matter of failures and their causes but will try to emphasize principles upon which this work can be planned and brought to success. The fact that some men (and they are few) have been successful in the past, simply proves that it was but individual skill, plus personal technic by which this was accomplished. There are but few in the profession who are marked by genius, and since the great bulk of the profession has had failure follow their operations in crown and bridge, it seems to me that it is the system of practice that permits of so great a percentage of failures that should be condemned. We have lacked a standard of operation as well as a standard of criticism, and these we must have if we are to progress.

Last week in Pittsburgh I asked the American Academy of Oral Prophylaxis and Peridontology to give us a standard of criticism from their view-point of peridental disease. This is necessary if we are to prevent failure that produce the conditions they are trying to control.

Let us in the entire profession cease being intellectual hypocrites and criticise honestly and fearlessly each other's efforts and soon we will be rewarded by a knowledge of all view-points and requirements. When we possess, each one of us, a true knowledge of the importance of the teeth in normal contour, contact and position, know their physiological and anatomical relationships to the rest of the head and body, we will have gone a long way toward laying a real foundation upon which to build.

Some of you know that I am strongly an advocate of the removable bridge, and that I have little place for the fixed type of bridge simply because it does not conform to certain physiological principles to which I believe all work should conform. However, in order to bring this subject into the light, a clear enunciation of a standard under which to proceed to a consideration of principles is necessary and of the greatest present importance. This standard, I believe, has been given to the profession by Dr. Orton before, and reiterated today. This standard has been emphasized by modern operative dentistry and really should be the standard of all dentistry, namely, "All operations should be so devised as to prevent recurrence of decay or injury to the soft tissues." More specifically, our standard should be, "that all operations should be devised so as to prevent injury to the soft tissues, conserve tooth function and leave the mouth in the most favorable condition possible."

If all operations are criticized by this standard, little will be lacking. Now let us reconsider, for purposes of emphasizing, the principles which should be fundamental.

Here I shall disagree with Dr. Orton a bit in the order of importance. A study of the oral cavity, its teeth and the condition in which we find it, lead me to the belief that the fundamental consideration is that of the physiology of the teeth and their supporting structures. Since everything human in health or disease is based upon the physiology or its disbalance, I feel this should be placed first. Organs have certain anatomical forms since nature has found those forms best suited for the function (physiology) that organ is to perform. If we understand the physiology of the teeth it is like knowing the alphabet,—all else opens up to us and we see reasons in the normal occlusion, the arrangement of the

teeth, their articulation and their wonderful anatomy. To the rational being, as Dr. Orton has said, to act according to nature is to act according to reason. Thus, since everything in nature has reason (but to be sought) we must act with her, and in all operations strive to but pattern after her. Since the most important duty of the tooth is its function, and since the health or balance of the teeth themselves and their surrounding tissue is dependent upon their functioning normally, this becomes the truly fundamental principle of all dentistry.

A study of the physiological functions of the teeth brings us to a consideration of the anatomy of the teeth and of their occlusion and articulation. We find that any deviation from the true to type anatomy or occlusion brings about a physiological disbalance, that allows degenerative changes to follow in their normal sequence. So then, as Dr. Orton has emphasized, a study of dental anatomy and of normal occlusion by the dental profession is absolutely necessary if we are to produce crowns, bridges, inlays or fillings that permit of normal physiological function, which means health.

To discuss the portion of the paper dealing with dental anatomy would be but taking up time, since I would but be following the leader, and I will try to call your attention to certain steps that can be taken to aid in reformation.

What do we, as crown and bridge workers, lack? First, a standard of operation and secondly, a general standard of criticism. There is no authority, no authorized opinion, no uniformity of technic or of teaching, and we believe this should be remedied.

What can be done? We believe in the necessity for an organization of crown and bridge workers who can go into this subject carefully and sincerely, and not leave it to one man or only a few to spend a life-time, as did Dr. G. V. Black, for cavity preparation, to bring his subject up to a science. We believe we can so standardize and classify principles as to no longer make it necessary for each man singly, thru long years of experience, to set up a personal standard that may or may be correct. This work is of a highly specialized nature, requires studies of many subjects, and is so broad that no other field can equal it in its complexities.

To be successful means great specialization in pulp canal operations, since many are the teeth that are to be crowned or carry bridges that require expert pulp canal treatment. In this connection there is required a knowledge of Roentgenology as well. The bridge-worker must be equipped either to do this himself, or to refer the patient for that work. It means that a man must be a physiologist and an anatomist, both complex requirements. It means that he must have a knowledge of normal occlusion and its deviations to an extent even greater than the orthodontist.

It means that he must be a diagnostician of the highest type since a correct diagnosis is half the treatment.

It means that he must have a knowledge of anatomical articulation equal to that of the most expert prosthetist, since a disregard of this means a complete failure and loss of teeth.

This most complex specialty needs for its making an organization that will bring all of its questions into the light of truth and science, and for this I am striving. This organization must be either as a section of the National, or independent of it. However it is to be—let us have it!

I thank you.

F. W. Frahm, D. D. S., Los Angeles, Calif.

When invited by the committee, in response to a request from Dr. Orton, that I should discuss his paper, I consented to do so if I could have a copy for several days prior to the meeting. I felt that it would not be fair to Dr. Orton and the members of this association if such an able and very important paper

did not receive careful study and consideration.

I take great pleasure and consider it a privilege to make the few remarks that I shall offer. It is not my intention to discuss every point or angle of the paper, for I could not hope to do so if I should try, but shall confine myself to two or three phases of the subject in hand. Having been a close observer of what the essayist is doing in the field of crown and bridge work and reading the articles that he has written from time to time on this subject, I feel that he has chosen a rather weak man to discuss his very able paper. Nevertheless, I trust that my few remarks may help to emphasize the points that seem very important to my mind.

The crown and bridge work of ten years ago is no longer to be considered as standard. The technic followed in those days can not hope to bring the results that are demanded of the operator of this day.

The searchlight from the Roentgen Ray tube brings out too clearly the defects that were not noticed in those days. Because there were flaws in our early technic and in the finished product is no reason why they should remain this day or condemn this whole branch of our endeavor. It should be the clarion call for more careful technic and a standardization of the methods to be followed under given conditions. In guiding the mind of the student into the labyrinth of procedures to be followed in restoring lost dental organs, we are immediately confronted with the question, "What shall I teach?" The text-books of the day are largely historical in character, some more or less ancient, tho they bear a recent date on the copyright page. What is the instructor to do? Well, he does what most men under similar conditions would do, teaches what he has been taught in college and found in the old school of hard knocks. Thus, from the fifty or more colleges of the land, are turned out the "57 varieties" of technicians, each contending that he has mastered the only successful method. It ought not to be so. We ought to have a definite system of applied dentistry in crown and bridge work based upon fundamental principles that are as fixed as the law of gravity.

If the love that the student of today shows in the work of making study casts of the case in hand is a mirror that reflects the tendency of the practitioner of the day, we can very easily conclude that there are very few such casts made. Likewise if the reports of salesmen for dental supply houses are worth anything, these same casts could not be mounted on anatomical articulators. Such articulators are not to be found in most of the offices of this day for one reason or another. Many of the larger and more difficult restorations are entrusted to the commercial laboratory.

I would like to urge the necessity of not only making casts of the case and the study of these after they are mounted on an anatomical articulator according to the characteristics of the case, but also the need of constructing the restoration under the supervision of the operator who studied and planned the case.

Sometimes a patient comes to our office for a filling and we are permitted to look upon a nearly perfect articulated set of teeth with well defined cusps and sulci. Here is a privilege that each man should avail himself of, namely, making casts of the case and face bone measurements, mounting these casts acccordingly, and spending much time over them in study. It will well repay the time and effort.

This method will give the student a clearer conception of the two arches as a whole and their relation to each other, the relation of each tooth to its neighbor, its antagonist, and the whole. It will surprise you what a lively interest this will create for you in dental anatomy. I know of nothing more beautiful in nature than perfect teeth arranged in arches that harmonize and functionate as

God intended they should. I have visited art galleries and admired the beautiful pieces of statuary done in marble by a master hand. Still to my mind, these in all their beauty lack something when compared with a perfect human tooth.

When we attempt to replace some of these lost teeth, build up a broken arch and restore an articulation, we must have a very intimate knowledge of each member of the arches, their relations to each other, the relation of these arches to each other, and the size of the mandible and the incline plane of the temporomandibular articulation. We cannot ignore this articulation, neither can we ignore the incline plane along which the condyle travels. Upon these depend the arcs known as the compensating and lateral curves.

As the essayist has pointed out, the maxillary molars and bicuspids incline buccally, while the mandibular teeth incline lingually from their long axis. This fact is largely due to the incline plane of the mandibular articulation,—somewhat modified by the triangular construction of the masticating machine. Because of this it will be noted that the degree of inclination is not the same on both sides of the individual.

Our bridge or even crown restoration must be of such a character that it will not interfere with these curves, otherwise undue stress will be placed upon the restoration, with a subsequent failure of the abutments or piers. Hence the importance of knowing the exact size and triangular construction of the mandible with its paths of movement as governed by the incline plane of the temporo-mandibular articulation. We cannot ignore one of the controlling forces and expect to get lasting and beneficial results.

A few words in regard to the contour of the individual crown. It is a very difficult matter to obtain an exact copy of the natural tooth by the old band or collar crown. A fine technician might succeed in contouring such a collar and get the results after some time spent at the chair. The average man could do better if he would adopt the method advocated by the essayist. The lingual and buccal construction of the human tooth is far from being alike. This holds true of the mesial and distal surfaces. These differences have a very important significance. sorry that I do not have the time to dwell on these. Suffice to say that the lingual surfaces of the maxillary bicuspids and molars and the buccal surfaces of these same mandibular teeth are more or less flattened in the middle third, with a very marked convexity at the gingival. Since the food passes largely over these surfaces in the process of mastication it would mean injury to the gum tissue if this marked curvature was absent. When a crown is made that does not embody this feature, the tooth is well started on the road toward pyorrhea alveolaris with our consent and encouragement.

It does not take a man with a long head to see that the two incline planes of the occlusal surfaces of a tooth that unite to form the medio-distal sulcus are the same length. Still how few crowns and bridges embody this feature. Nature, in order to make the tooth efficient made the two working incline planes, (namely the buccal incline of the lingual cusps of the maxillary teeth and the lingual incline planes of the buccal cusps of the mandibular teeth) longer than the other two planes that aid in forming the rectangular groove. This gives the teeth one-third more surface for crushing food. If the reverse condition is carved into the crown or bridge, we reduce its working capacity, making the passive cusps too long and thus bring a leverage on the restoration which will surely number the days of usefulness of the bridge or crown and the life of the abutments and pier supporting it.

There are many more features in this most excellent paper that I would like to discuss, but must close for it would make the discussion too lengthy.

I want to thank Dr. Orton for this ex-

cellent paper and his appeal for standardized crown and bridge work.

FORREST H. ORTON, D. D. S., St. Paul, Minn:

I have nothing further to add except to say that I heartily endorse the suggestion made by Dr. Knoche in support of the National Crown and Bridge Association. The men who are interested in teaching crown and bridge work, and those men who are making a specialty of it, should get together and decide upon some fundamental principles; not to get together and exploit some one method, because a method is only valuable to the man who invents it, or chiefly valuable to him; but fundamental principles are important to all of us, and if we can have such an association we might continue to make such strides as have been made in recent years by orthodontists. (Applause).

IMPACTED LOWER THIRD MOLARS.—CAUSES, SYMPTOMS, DIAGNOSIS, AND TECHNIC OF REMOVAL.

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AFTER the age of twenty the most serious and painful trouble of dental origin is not decayed teeth, but impacted teeth. It is not stated, be it remembered, that it is the most frequent trouble of dental origin.

Impacted teeth cause a greater variety of wide spread and serious disturbances than any other single dental lesion. Complications arise in seventy-five per cent of the cases of unerrupted teeth. When the estimate is made that seventy-five per cent. of the cases of unerrupted teeth are complicated with other disturbances, this is not based upon accurate statistics, but upon the common clinical experience that most of these cases give evidence of some other coincidental trouble. (9, 12.)

The lower third molar is the tooth most frequently impacted, and the upper canine is next.

An impacted tooth is one that is prevented from erupting by either a barrier of bone, another tooth, or tooth root.

CAUSES.

The causes of impaction of lower third molars are many and may be divided into predisposing and exciting causes.

There are twelve prominent predisposing causes. 1. Defective embryonic development. 2. Perverted development. 3. Mal-nutrition. 4. Syphilis. 5. Rachitis. 6. Neurotic tendency. 7. Eruptive fevers. 8. Anemia. 9. Artificial feeding. 10. Scurvy. 11. Cretenism. 12. Idiotism. (1, 3, 6, 12, 13, 15.)

THE EXCITING CAUSES.

1. Arrested maxillary development. 2. Undue thickening and resistance of the overlying tissues. 3. Undue stimulation of the inferior dental nerve by pathological conditions producing nutritional changes that intensify the bone in the region of the impacted tooth. 4. Malposition due to contracted dental arches. 5. Severe traumatism to the jaws causing deposition of lime salts in the cancellous tissue. 6. Too early loss or extraction of decidious teeth. 7. Failure to lance the gums in retarded eruption of deciduous teeth, producing abnormal density of the cancellous tissue of the mandible. 8. Improper orthodontic treatment. 9. Improper or excessive pressure in orthodontic cases. The application of force in the treatment of dental irregularities is often made, it has been claimed, without due regard being given to the laws and forces of development. Particularly is this true in regard to the posterior movement of molars to promote pleasing alignment of anterior teeth. 10. Inflammations of the jaw bones set up by decayed teeth. 11. Local increase in the density of the bone brought about by inflammation of the peridental membrane extending into the alveolar process. The cancellous tissue instead of remaining spongy and elastic, becomes hard and solid. This condition, following caries of the first permanent molar soon after its eruption, is a fre-

quent cause of impaction of the lower third molar. (1, 2, 3, 4, 5, 6, 9, 15.)

SYMPTOMS.

Impacted teeth may be present without giving rise to any appreciable local or systemic symptoms.

The local manifestations may be noted in the appearance of the cusps or the crowns of the teeth thru the gum upon the surface of the alevolar ridge, or the gum may be swollen and tender from being bitten upon by the antagonizing tooth in the opposite maxilla. Spasmodic contraction of the muscles of mastication may result from direct nerve irritation. This inflammation may extend until surrounding muscles and glands are involved and cause temporary ankylosis, the degree of which may be slight, or, sufficient to cause complete fixation of the mandible. The swelling may be confined to the tissues in the region of the angle of the mandible and also may extend to the parotid and submaxillary structures.

Pain may be continuous and severe, or it may be noticed only upon an attempt to open the mouth. The tissues of the floor of the mouth may become infected and cause symptoms identical with Ludwig's angina and thus endanger life thru difficulty in respiration and swallowing.

Pain may be neuralgic in character and distributed along the branches of the trifacial nerve.

One characteristic local symptom is pain of greater or lesser severity when the attempt is made to keep the mouth open for two or three minutes. Frequently pain is referred to the teeth in the upper jaw. (1, 2, 3, 5, 8, 9, 13.)

GENERAL SYMPTOMS.

In adult cases, malposed or supernumerary teeth are the frequent causes of reflex pain, facial spasm, chorea, epilepsy, dementia precox, mania, paralysis, sensory alerations, neuralgia or tropic changes, paroxysmial pains, simulating tic douloureux, insomnia, chills, thrills and flushes, muscular twitching, sweating melancholy, fever, rapid or irregular pulse. Pains across the frontal, temporal and parietal bones. Pains in the ear, eye, temples, temporo-maxillary articulation, shoulders and knees.

When accompanied by suppuration and infection a toxemia of greater or lesser degree is established. Sometimes tonsillitis is set up. (1, 2, 5, 8.)

LOCAL EFFECTS.

There may be swelling and inflammation of the gums covering the impacted tooth. This is caused by the upper teeth coming in contact with the irritated gum. The irritation may progress thru the several stages of inflammation and suppuration, producing cellulitis, tonic contraction of the muscles of mastication, tonsillitis, and infection of the lymphatic glands of the mandible and cheek. The impacted tooth may, by impinging upon the roots of the tooth in front of it, cause absorption or caries and exposure of the pulp. This, unless relieved, will develop into an alveolar abscess. Caries of the impacted molar frequently occurs, due largely to the hood of gum which covers part or all of the crown of the tooth. This retains the debris of the mouth forced under it. Decomposition takes place with the formation of pus, toxines and acids. Disintegration of the enamel and dentin follows, then death of the pulp and infection of apical foramen. This may further progress until a very extensive osteomyletis of the mandible is produced. Not infrequently impacted molars become encysted followed by degeneration of the cyst wall and extension of the area of destruction. 6. Necrosis of the alveolar process is not uncommonly caused by impacted molars. This may extend to and involve the ramus and body of the mandible. 7. Tumors both benign and malignant, have been caused by the infection, the intense irritation, and the lowered tissue resistance produced by impacted teeth. Cancers have been found

on the site of inflamed tissue over and around impacted teeth. Frequently these have developed beyond the hope of cure. 8. The roots of the impacted teeth may be curved, twisted, and hypercementosed and press upon the pericementum, the inferior dental nerve or its branches. 9. Infection of the inferior dental canal may be established by the incomplete root development and pathological conditions that arise from impacted teeth. 10. The infection of the inferior dental canal may also be produced by the pressure of the impacted molar causing absorption of the root and death of the pulp of the second molar. The subsequent development of an alveolar abscess may extend to and involve the impacted and infection of the inferior dental canal set up. (1, 2, 3, 4, 5, 6, 9, 12, 13, 15.)

GENERAL EFFECTS.

1. Impacted teeth may set up functional nervous and mental disorders without causing any local symptoms. (9, 12, 13.)

2. Impacted teeth may cause paralysis of the arm, spasm of the sterno-mastoid muscle (wry neck), Tonic spasms of the upper extremities, Otalgia, deafness, and nervous affections of the eye. Nervousness, insomnia, neurosthenia, melancholy, melancholia, epilepsy, dementia precox and mania. (9, 10, 11, 12, 13.)

3. The infection of the tissues surrounding impacted molars may produce toxic neuritis, arthritis, endocarditis, nephritis, septic gastritis, colitis, anemia, toxemia, septicemia. (1, 2, 5, 8, 9, 10, 12.)

DIAGNOSIS.

Impacted teeth may sometimes be diagnosed by the pain, swelling, redness and impaired function of the jaw. Probing may in some cases discover the impacted tooth.

THE RADIOGRAPH.

The X-Ray, "that instrument of precision," renders the diagnosis of impacted lower third molars positive, certain, and exact. Its use saves time, trouble, confusion, doubt, possibly the patient's life.

In every case in which impacted teeth are suspected or considered a possible cause of local or systemic disturbances, the patient should be advised to have a radiograph made as soon as possible.

A radiograph is not only a positive, a certain, and an exact means of diagnosis, but it is of inestimable and unquestionable value as a guide for the operator in the removal of impacted teeth.

The radiograph will not only show whether or not an impacted tooth is present, but will show the position of the tooth, the size and direction of the roots, the proximity to the inferior dental canal and with some degree of accuracy, the density and conformation of the jaw bone. It will disclose whether or not the tooth is abscessed, the roots excementosed, or absorbed, the bone necrosed or destroyed.

After the tooth has been extracted, the radiograph will render another service, it will satisfy both patient and surgeon whether or not the operation was thoro, complete and successful.

Did the X-Ray serve no useful purpose other than that of locating impacted third molars, and diagnosing conditions associated with them, it would be a great boon to the dental profession and those to whom it ministers.

My experience as an oral surgeon and radiologist teaches me, and this is confirmed and re-inforced by oral surgeons of considerable skill and long practice, that an operator is unwise, uncautious, and unprepared, who fails to procure a radiograph before attempting to remove an impacted lower third molar.

The radiograph will enable the careful operator to do better surgical work and leaves no excuse for a careless operator who, by its means, may anticipate many of the dangers which the removal of such teeth sometimes involves.

It matters little if the jaws are closed

as tight as a safe, by the employment of a proper technic the impacted tooth may be located.

The findings of the radiograph will largely determine the method and technic of removal.

TECHNIC OF REMOVAL OF LOWER THIRD MOLARS.

Frequently it is advisable to attempt the reduction of inflammation when severe before undertaking the surgical operation.

This may be accomplished in many cases by first painting with tincture of iodine the flap of gum covering the tooth and then packing a small piece of iodoform gauze under the flap. A thoro cleansing of the teeth and the frequent spraying of the mouth with an antiseptic solution will also help. Cold compresses, applied intermittently, and a little calomel, 2 to 4 grs., followed by a saline cathartic, will also have a beneficial effect. The application of the violet ray inside the mouth, after a thoro painting, with iodine, of the gums and mucous membrane, in the vicinity of the tooth for ten to fifteen minutes is also beneficial. This may be followed by the application of a larger electrode upon the face in the neighborhood of the angle of the mandible.

There are not a few methods of removing lower third molars—from floss silk to turn keys, and each has had its advocate.

But the technic, which follow modified to meet the individual case, is applicable to the larger number of cases. It has been followed by the greatest success in the hands of the writer, except in those cases in which the tooth is located in the lower border of the mandible, or the angle or body of the ascending ramus.

Prior to the operation, the following instruments and articles should be prepared:

Freedman mouth gag, or Cameron's mouth gag.

Cheek retractor.

Tongue depresser.

Small retractors (sharp toothed).

Bone cutting burs.

Curved bistoury.

Periosteal elevators.

One or two curretts.

Right angle root elevators and straight elevators.

Tooth forceps, bone cutting forceps.

Bone chisels and mallet.

Packer.

Curved needle, needle forceps, and sterilized horse hair, or silk.

Iodine Solution.

Orthoform or Euroform Paste.

Novocain powder.

Iodoform gauze lin folded.

Normal salt solution and syringe.

One to two dozen small swabs of gauze, ¾ inch wide and rolled about ½ inch in diameter.

Curved gum scissors.

Small gauze wipes which, when folded, measures about 1½ in. x 1½ in.

Prior to giving the anesthetic, whether general or local, the mouth and teeth should be placed in an as aseptic a condition as possible. The teeth should be thoroly scaled and polished as circumstances permit. Just before giving the anesthetic the mouth should be thoroly sprayed with a warm antiseptic solution, then the surfaces of all the teeth, particularly the interproximal spaces, should be painted with iodine.

After the mouth gag is inserted, before the general anesthetic is given, if done under conductive anesthesia, the mouth gag is inserted at the time of the operation.

The site of the operation, again should be painted with iodine. With the cheek held away by a cheek retractor in the hand of the assistant, an incision is made in the gum about one-half inch below, if possible, the center of the gum margin of the second molar tooth on the buccal side. If it is not possible, because of the conformation of mandible in this region, to carry the incision below

the second molar tooth, the incision is carried below as far as possible and then buccally. This incision is carried upward to the second molar and then backward in the median line of the jaw about ¾ to 1 in. distal to the second molar. This may bring it up on the ramus.

With a sharp periosteal elevator, the periosteum, on both sides of the incision, is pushed off or elevated from the bone. With the two forked or rake shaped retractors, the two flaps are pulled aside to expose the bone. The object of the operation then becomes the removal of a triangle piece of bone, more or less complete, ¾ to one inch long on the upper side descending ¼ to ½ inch and parallel to the long axis of the second molar and the ends connected by a diagonal line drawn from a point one inch distal to the second molar to the point one-half inch below the center of the gum margin of the second molar tooth.

This may be accomplished by the use of either a bone cutting bur or a bone chisel. With the radiograph for a guide, if a bone cutting bur is used, the bur is started at the point one inch distal to the second molar, carried forward to the second molar in a line dividing the body of the mandible. The bone is cut until the tooth is encountered and the bur is then withdrawn and the bur is again started at the distal point on the ramus, carried obliquely forward and downward to a point opposite the end of the first bone cutting. These two points are then connected and the triangular piece of bone removed with a chisel. If the chisel is used, an opening distal to the second molar may be made with the bone cutting bur, and then the section of bone previously outlined may be chiseled out or the entire operation may be done with the chisel alone. Care must be exercised to avoid cutting thru, facturing or crushing the lingual plate of bone because of the proximity of the lingual and mylohyoid vessels and nerves.

This operation will uncover 80% of the impacted lower third molars. After the tooth is uncovered, it may be tilted out with a right angle or straight elevator. Sometimes it may be necessary to separate the roots from the crown with a right angle piece and remove the parts separately. If convenient, the tooth may be removed with a suitable pair of forceps.

During the operation, the little gauze swabs are used to swab out the blood and saliva which may find their way into the wound.

After the tooth is removed, all rough edges of bone must be smoothed off with chisels or curetts, bone cutting forceps, or large bone cutting burs, and all necrosed bone must be curetted out. Shredded or ragged gum tissue may be removed with curved gum scissors. The cavity is then irrigated with warm salt solution, then swabbed out with a dry swab. The cavity is then painted with iodine solution, either the tincture, or the acqueous solution of iodine and iodide of potash. Into the cavity is then placed euroform paste or orthoform and novocain powder and the cavity tightly packed with iodoform gauze. The orthoform or novocain will relieve the post operative pain. The posterior part of the wound may then be closed with two or three silk or horse hair stitches, and the anterior part left open for the removal and replacement of the iodoform gauze. The mouth gag is then removed and patient instructed to return in one, two or three days. Trigenim is prescribed to take care of any pain unrelieved by either orthoform or novocain. Upon the patient's return the cavity is irrigated with normal salt solution and the iodoform gauze renewed. This is repeated every two or three days until the wound is covered with granulation tissue.

A saline cathartic is also prescribed. Intermittent applications of iced compresses to the jaw, and the patient is instructed to avoid attempting to eat solid food for at least twenty-four hours.

In all stages of the operation, asepsis must be strictly carried out.

DANGERS.

The removal of these lower impacted third molars is a surgical operation and not a simple extraction.

Because of the anatomical location of impacted lower third molars and the not infrequent unfavorable conditions under which their removal must be effected, certain definite dangers, in addition to those common to other surgical operations, must be anticipated, so far as possible, and guarded against.

1. The inspiration of blood.

A patient deeply under a general anesthetic, lying in the prone position, the blood may easily drain into the trachea in such quantities as to fill the bronchi, flood the lungs and cause instant death. This has been a frequent cause of fatalities during mouth operations.

2. Pneumonia.

The inspiration of bacterial ladened blood or saliva may produce septic pneumonia which may lead to a fatal termination.

Both of these dangers are greatly reduced if not completely overcome when conductive anesthesia is employed.

3. Hemorrhage.

The immediate loss of blood, if unchecked, may be a serious menace to the vitality of the patient. A secondary hemorrhage may be difficult to control and serious in its results. Careful packing will greatly guard against this.

4. Hemophiliac.

The danger and difficulty attendant upon the management of a bleeder with wounds of this character in the mouth are serious and perplexing. The most reliable agent under such a condition, is the use of horse serum.

5. Fracture of the Jaw.

Unless the technic outlined or a similar technic is carefully carried out, with particular emphasis on the "carefully," the danger of fracturing the jaw or causing temporary or permanent ankylosis or injury to the nerves must not be lost sight of.

6. The danger of general infection.

Every effort should be made to guard against this by carrying out a careful and aseptic technic.

7. Failure to secure the tooth.

A lower molar suddenly forced out of its socket may be swallowed or become lodged in the trachea or bronchi, causing suffocation or death.

The fatalities that have resulted from these causes may be traced in many instances to haste in operating, the failure to secure a good radiograph, the failure to look upon the removal of these teeth as a surgical operation, the neglect of aseptic precautions and the carrying out of a careful technic, and the inability to employ or failure to employ, because of the lack of appreciation of its great value and safety conduction anesthesia. (1, 6, 11, 12, 13, 14, 18.)

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THE PREVENTION OF ORAL FOCAL INFECTION.

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(Read before the District of Columbia Dental Society at Washington, D. C., February 9, 1917.)

FOCAL infection is the most interesting subject of the present time in both medicine and dentistry. The removal of the focus of infection has become the approved method of treating the systemic diseases.

The mouth is the greatest field of focal infection, according to leading authorities in the practice of medicine, and as prevention is much more important than cure, and vastly more successful, the famous statement of Dr. Charles Mayo that the next step in preventive medicine must be taken by the profession of dentistry seems to be no exaggeration, and the responsibility of dentistry for much of the health and happiness of the human race assumes serious proportions.

There are two principal avenues of infection in the mouth, thru which probably 95% of oral focal infections arise. They are the gingival border of the peridental membrane, where pyorrhea begins; and the alveolar abscess which is caused by infection thru the exposed root canal.

This paper will therefore treat of the location, form, structure, functions, injuries and protection of the gum tissue and gingival portion of the peridental membrane.

Dental caries as the most frequent cause of exposure and death of the pulp with subsequent alveolar abscess will be treated as to its points of beginning, periods of activity, and methods of prevention. Operative procedures or technic will not be gone into, but we will endeavor to confine the paper to a review of the principles upon which correct operative procedures must be founded.

If the bones of the jaw be examined it will be observed that the alveolar process surrounds the roots of the teeth only to a point approximately 2 to 3 millimeters from the line of junction of the cementum and enamel. This line is called the gingival line. The peridental membrane surrounds the root of the tooth, not only filling in the space between the wall of the alveolus and the root, but also extending crownwise on the root to the gingival line. In other words, all of the cementum of the root is covered by peridental membrane, but all of the cementum is not surrounded by alveolar process; the root portion of the tooth protruding from its socket from 2 to 3 millimeters, in the opinion of the essayist, should be designated as the neck of the tooth.

Covering the alveolar process, investing the necks of the teeth, and extending around a considerable portion of the enamel covered crown is found a dense mat of connective tissue, containing many white fibres and forming a firm membranous mass, which is continuous with the deeper lying periosteum on the outer sides of the alveolar process, is firmly attached to the peridental membrane at the necks of the teeth, and has its unattached or free margin extending occlusally for some distance beyond the gingival line, hugging the enamel of the tooth tightly by having no attachment thereto. This tissue is called the gum or gums, and is covered by a strong outer coat of

squamous epithelium known as the mucous membrane.

The gum tissue which lies to the occlusal of the crest of the alveolar process is called the gingiva. Black has termed its sub-divisions the body of the gingiva, and the free gingiva, or free gum margin. The body of the gingiva surrounds the neck of the tooth being attached to the gingival portion of the peridental membrane. The free gingiva extends occlusally from the gingival line, hugs the enamel tightly but has no attachment thereto. Dense bundles of fibres from the peridental membrane extend into the free gingiva and hold it in firm contact with the enamel.

The crownwise extension of the free gingiva differs in various mouths, its length being from 1 to 4 millimeters. It is longest in youth; diminishes as age advances. While it fits closely around the gingival third of the tooth crown, a thin, flat instrument may be easily passed between it and the enamel to its attachment at the gingival line the gingiva thus enclosing the immediate gingival margin of the enamel. In young persons, we often see one-half of the length of the crowns of the teeth buried in the gingiva even after the teeth are regarded as fully in place. As age advances, the gingiva becomes shorter, showing more of the crown, and finally recedes to very near the gingival line.

The gingiva also fills the large portion of the inter-proximal spaces in the form of septa passing between the teeth from labial, or buccal, to lingual. This portion of the gingival which Constant terms "the inter-dental papilla" and Black calls the "septal gingiva" is much longer than that on the labial and lingual surfaces of the teeth. In normal conditions it reaches from the gingival line to the contact-point between the teeth, completely filling all of the space rootwise and from the height of contour preventing accumulations of debris. By "height of contour," is meant the line of vertical tangents which indicates the points of greatest lateral contour of the tooth, and divides the clean from the unclean surfaces; the line which marks the gingival extremity of the food-swept area of the axial surfaces. The form presented by the gingival on the labial and buccal surfaces is a series of imperfect semi-circles with the concavity toward the occlusal surfaces of the teeth, and with the points of junction of these extending into inter-proximal spaces. On the lingual side of the arch, the conditions are much the same, but the points of the gingiva between the teeth are less prominent. As age advances and the gingiva recedes toward, or even to the gingival line, the septa of soft tissue fail to fill the septal spaces. This may induce pathological conditions by affording space for lodgment of debris in pockets, which favors fermentation. A like condition is also induced frequently by a faulty form of proximal contact, or thru the flattening of the contact points by wear, which allows food to be forced into the inter-proximal space, and break down the gum septum by its pressure.

This arrangement of the soft tissues around the teeth, the covering of the gingival third of the axial surfaces and the filling of the septal spaces, appears to be a peculiar provision on the part of nature; and as nature does not develop an organ without a definite purpose, let us consider the possible advantage of such an arrangement of the soft dental tissues.

The mouth, with its ever present conditions of moisture, heat and suitable pabulum, makes an ideal incubator for most classes of micro-organisms. The gums covered by their layer of mucous membrane, which serves as a protective epithelium, seem to be immune to the influence of mouth bacteria; but the peridental membrane, a deeper tissue, which is never normally exposed to the secretions of the mouth is readily infected when exposure comes. Carefully compiled statistics show that more teeth are lost after

25 years of age thru disease of the peridental membrane than from all other causes combined. They also demonstrate that, aside from alveolar abscess caused by infection thru the root canal probably 99% of peridental diseases begin at the gingival border. The first step in disease of the gingival border of the peridental membrane is inflammation of the gingiva with subsequent relaxation of its fibres, when, instead of hugging the tooth tightly and preventing the entrance of anything from the mouth and micro-organisms collect, and inflammation of the peridental membrane occurs, which if not cured in its incipiency is followed by pyorrhea and the ultimate loss of the tooth.

Your essayist, after considerable study of this disease, believes that every case of Pyorrhea is preceded by a gingivitis and relaxation of the fibres of the gingiva, the formation of a pocket in the gingival space and infection from the mouth. As long as the gingiva is normal and healthy, pyorrhea cannot occur. Considering that so large a percentage of our work consists of the treatment of this disease, and that pyorrhea when once fully established is extremely difficult to control, is there any dental tissue more necessary to conserve that the gingiva whose healthy condition makes pyorrhea impossible?

If we again examine a normal skull we will see that while the teeth touch at their proximal surfaces by what is called contact points spaces of considerable size, termed inter-proximal spaces, occur between them. These inter-proximal spaces are bounded by the planes of the occlusal, buccal and lingual surfaces of the teeth, and by the crest of the alveolar process. The inter-proximal space is divided into the septal space, and the buccal and lingual embrasures. Where these spaces are of improper form and size, the efficiency and lingevity of the denture are proportionately impaired.

Examination of a healthy mouth will show these spaces to be filled by the gingiva to the height of contour of the axial surfaces. To this portion of the inter-proximal space that is occupied normally by the septal gingiva, or gum septum, Black has given the name septal space. So long as the septal space is occupied by healthy gingiva, food matter will not become packed therein, with its subsequent fermentation, caries of enamel, gingivitis and peridental disease. But when anything interferes with this normal gum septum, some, or all, of the conditions mentioned rapidly follow.

Long experience and careful observation on the part of intelligent operators indicates that caries of enamel never begins beneath a healthy gingiva, and that when decay has commenced on the unclean gingival half of a tooth surface it spreads on the enamel surface stops at gum line. No definite reason for this inhibitory action of the healthy gingiva upon dental caries has ever been given except possibly the observations recorded by Black in his work on the Periosteum and Peridental Membrane, published in 1887, wherein he calls attention to a slight secretion developed by the gingival in the sub-gingival space. Your essayist has noted a similar inhibitory action exercised by the gingiva on the progress of erosion and in the study of a great many cases of that disease has seen numerous instances where the gingival extension of the erosion stopped at the gum line; but he has never seen a case where the eroded area extended beneath the gingiva.

If the gingiva can be maintained in a healthy condition pyorrhea will be prevented and some of the more serious lesions of dental caries such as proximal gingival third, and sentile decay, can to a large extent be avoided. The important functions of the gingiva begin established what steps can we take to insure its proper maintenance? Obviously by considering the conditions that

give rise to its injury and by taking measures to avoid or prevent them.

What conditions threaten the health of the gingiva?

First—Faulty contacts between approximating teeth. These may be due to poor contour of the tooth (thick necked teeth); the flattening of the contact points into surfaces of contact by the lateral wear of the teeth from years of use in mastication; the loss of the occlusal third of the teeth from abrasion caused by the excessive chewing of tobacco, beech nut and similar habits; the undermining of contact points by decay; failure of the dentist to reproduce the proper rounded form of contact point on a proximal filling or the proximal surface of a crown or inlay. Faulty contact points permit food to be forced thru the contacts and to impinge on the gigiva, causing successively, discomfort, inflammation, recession, gingival pockets, infection of the peridental membrane and pyorrhea.

Second—Another class of conditions inimical to the gingiva might be termed "Get Rich Quick Operations." These are usually performed by the dentist whose slogan while a student was, "No theory for me, please, give me practical dentistry only," and whose whine, after years of operative failures, is "They didn't teach me any better in College."

These are conditions where, from excessive proximal decay, the teeth have moved together mesio-distally, the interproximal space has been largely obliterated and the proximal surfaces are in contact almost from gingival line to marginal ridge. The embrasures are greatly constricted; there is practically no septal space, and the gingival has been squeezed back to the gingival line. The operator is too busy, or too lazy, or too ignorant to appreciate the conditions, or too incompetent to remedy them; so for some, or all, of these reasons he fills or crowns the tooth in the manner that causes him least inconvenience, and the patient retires more injured than benefited, carrying with him one or more of the innumerable dental abortions that give rise to the well meant strictures of a Hunter, or other critics, and cause the conscientious practitioner to blush with shame for such crimes committed in the name of dentistry. When our leaders, our scientists, point out the importance of inter-proximal space, the necessity for separation, proper contour, contact points, form and size of septal space, even that fundamental therapeutic principle based on the pathology of caries of enamel, viz: Extension for Prevention, do we welcome them as teachers who come to show us now to save teeth, how to become proficient in our calling; or do, we rather, metaphorically, crucify them for theoretical heretics who come to make our work harder? Meanwhile we salve our professional conscience by proclaiming how much of the patient's tooth structure, and time, and money we have conserved;—until another teacher comes along and shows us what promises to be an easy way of transmuting wax fillings into gold ones; then we forget all about the necessity for conserving tooth structures or the patient's time and money, but cut as far as may be necessary for the mechanical steps of the operation, and apparently charge the patient in proportion to the size of the filling, or the case with which we hope to make it.

The restoration of the mesio-distal breadth of the inter-proximal space; of the concavo-convexity of the proximal surfaces; of the rounded contact points; of the wide-open buccal and lingual embrasures; of the properly placed height of contour; the extension of cavity outlines to areas protected by securing the food, or the contact of healthy gingiva; the maintenance of the integrity of the gingival line and the attachment of the peridental membrane at that point. These are some of the commandments of the gospel of scientific dentistry, and they cannot be neglected with impunity.

Anything that interferes with the normal size and form of the inter-proximal space, such as the conditions cited, or improperly adapted crown bases, or crown bands, excess of filling material left at the gingival portions of cavities where it will not be seen (until the tooth is extracted) and when it is "too much trouble" to properly contour; one and all of these conditions preclude the possibility of a healthy gingival.

Another condition that must be guarded against is injury to the attachment of the gingiva at the gingival line by the improper use of ligatures; the placing and maintaining of a rubber dam in position for a considerable time without previously cleansing the field of application; the neglecting to remove salivary or serumal calculus; the improper use of scalers in such removal whereby the operator's ignorance of the location of the gingival line results in his severing the attachment of the peridental fibres at that point; any use of finishing instruments, disks or straps that injures the gingival; and finally the extending of the gingival wall of a cavity beyond the gingival line as is very likely to be the case where the gingival wall is made concave from the occlusal as is done in round bottomed cavities.

The improper use of the toothpick by the patient in his endeavor to dislodge impacted food from faulty inter-proximal spaces is also a prolific cause of injury to the gingiva.

Any of the conditions enumerated may be sufficient to start a train of lesions that will ultimately result in the loss of the teeth. And not only this, but some of the semingly simple exposures of the peridental membrane thru injury of the gingiva, are sufficient to permit the development of foci of infection that may give rise to serious systemic disturbances, or complicate already existing general disorders, and retard recovery therefrom.

With these things in mind is it not high time that we devoted more serious thought to the gingival tissues and their proper treatment and conservation?

The first step in the examination of the mouth should be a careful study of the gingival tissues, and any slightest departure from a healthy appearance should be investigated and the cause removed. Repair of lesions of the hard dental tissues is a simple matter compared to the alleviation of advanced lesions of the gums or peridental membranes and as the health and usefulness of the teeth depend very greatly upon healthy soft dental tissues, therefore the intelligent study and treatment of the gingiva becomes our primary duty to our patients.

The other source of danger in connection with the development of focal infection in the mouth is the alveolar abscess. This abscess always begins in the apical portion of the tooth socket, and is always caused primarily by infection thru the root canal. It is always preceded by the death of the pulp.

The death of the pulp from causes other than infection thru a carious cavity is so infrequent that the same need not be considered at this time. Certainly if dental caries can be prevented, or checked in its early stages, dead pulps and alveolar abscesses will become rare conditions. To accomplish this desirable result requires a knowledge of the pathology of dental caries; and the application of such knowledge to the development of definite preventive and remedial measures.

The dentist who looks upon dental caries as an obscure condition which manifests itself by causing holes in the teeth is quite likely to consider the stuffing or plugging of those holes as the ultimate purpose of operative dentistry. The fact that decay more frequently recurs around his "plays" means little to him for he argues that if the perfect tooth decays why should not the repaired one continue to do so.

A careful study of the phenomena of

dental caries, however, will soon convince us that the cavities of decay that develop in the teeth are not mere accidents, or the result of purely physical influences, but that they are symptoms of a disease, which is distinguished by very definite points of beginning, periods of activity, manner of progress, etc. Once dental caries is recognized as a disease it is not impossible to prevent it in many cases; nor is it very difficult to control its progress or prevent its recurrence.

Inasmuch as the limits of this paper will not permit of a thoro treatment of the subject of dental causes the essayist will confine his remarks to a few brief statements regarding certain well recognized phenomena of the disease.

Caries is a disease that is practically universal in the human family. So prevalent is it that not more than 3 per cent of mankind are immune. But this doesn't mean that the unfortunate 97 per cent of us who have decayed teeth necessarily suffer from the disease at all times. On the contrary dental caries is manifestly a disease of childhood and advorescence; and those of us who have had intelligent care of our teeth between the ages of 4 and 20, rarely suffer from the disease thereafter, unless it be during prolonged periods of great vital depression, or low resistance.

Neither are all portions of tooth surface equally susceptible to dental caries. A careful study of the beginning of caries will show that certain portions of the teeth rarely, if ever, become the initial point of decay; while there are other places which are practically always the first to succumb.

For the sake of brevity some of the important features of the pathology of caries will be stated in axiomatic form. These are not arbitrary statements, they are based upon careful observation, amply proved.

1. Decay does not begin upon tooth surfaces that are kept scoured by the food in vigorous mastication, unless there are defects in the enamel of those surfaces, such as pits and fissures, which permit micro-organisms to penetrate to the dentine where the grinding action of the food cannot sweep off the tooth structure.

2. Dental caries can be divided into four stages or classes.

3. The first class, or primary stage, of dental caries is the first to appear, and begins in the pits and fissures (defects) that, as the result of incomplete enamel formation, are found in the occlusal surfaces of molars and bicuspids; the buccal and lingual grooves and pits that sometimes occur in the occlusal portions of those surfaces; and in the lingual pits of upper incisions.

This class of decay is the first to be seen in the mouths of young patients and is marked by the fact that the orifice of the cavity is always small, and the interior usually large. On account of the small orifice, and the large, deep interior, this type of decay is spoken of as penetrating decay. The penetration is due to the fact that the decay has ready access to the dentine thru the original enamel defect, and a long time to progress without interruption. The orifice remains small because the micro-organisms are prevented by mastication from spreading on the surface and thus enlarging the opening.

4. The second stage of decay is proximal decay. It always begins just to the gingival of the contact point, and spreads on the surface of the tooth only as the septal gingiva is forced back and permits it. Its penetration thru the enamel is slow, as the enamel at this point is seldom defective; therefore, this type of a cavity is spreading rather than penetrating. Cavities of this class are usually several years later in manifesting themselves than are the pit and fissure cavities. Once the dentine is reached, however, the contact point readily undermined and is broken away by lateral pressure of the teeth; the inter-proximal space is lessened; the

septal gingiva recedes, debris collects in the pockets that are formed; gingivitis occurs and frequently chronic supperative pericementitis (pyorrhea) results.

5. The third stage of caries is gingival third decay, which attacks the buccal surfaces of the molars and the labial surfaces of the upper incisions and cuspids, but very rarely the lingual surfaces of the teeth. Many patients never suffer from this type of cavity, and when it does occur it usually comes late in the adolescent or early adult period. The cavities begin near the gum about midway mesio-distally of the gingival third of the tooth. For a long period they pass as superficial decay, which spreads over this area until it reaches a point at the mesial or distal, or occlusal, where the scouring action of the food limits its spread. It always stops at the gum line if the gingival be healthy. After a considerable lapse of time the enamel is penetrated and the dentine reached. This type of decay is called spreading decay. It penetrates slowly because the enamel is perfect and presents no defects to permit rapid penetration. It spreads over a large surface because the surface is unclean, and mastication does not scour off the colonies of micro-organisms.

6. There is a fourth stage of caries, serile decay, which begins in the cementum beyond the gingival line, but this is always preceded by such injuries to the gingival that the carious cavity is greatly exceeded in seriousness by the soft tissue lesions that have given rise to the gum recession necessary to permit the developments of decay. It takes its name from the fact that it is frequently found in the mouths of elderly patients.

If the dentist has a knowledge of the immune and the susceptible areas of tooth surface, is familiar with the stages of caries, and knows where to watch for the beginnings of the disease, he should be able to combat it in the incipiency and permanently protect the invaded surfaces so that the pulp does not become endangered.

If we can maintain the health of the gingiva, and control caries so that it does not reach the pulp, we can prevent pyorrhea and alveolar abscesses, and thus removed the possibility of those two prevalent seats of focal infection. When dentistry with the aid of the patient has accomplished this, we will have taken "the next great step in preventative medicine."

A PLEA FOR A MORE COMPLETE ORGANIZATION OF THE DENTAL PROFESSION.

By L. P. Bethel, M. D., D. D. S., Columbus, Ohio.

(Editorial that will appear in the April Dental Summary.)

WHEN we take into account the fact that the National Dental Association has a total membership of nearly one-half of the dentists practicing in the United States it may at first thought seem absurd to propose **a more complete organization of the dental profession.** And yet we feel that this is possible and that it should be done.

To show what organization will do, we will cite what it has already done for the National and a few state dental societies.

At the time of the reorganization of the National Dental Association it had approximately only about seven hundred members, while it now has about twenty thousand.

When the National was reorganized there were but a few states that were organized into district or component societies. Now eighteen states are so organized, and let us see what this organization means to the state society. Illinois was the first state to completely organize component societies, altho at that time a few other states had a limited number of district societies.

At the time of this organization in 1904, the Illinois State Dental Society had a membership of two hundred and seventy-four paid members. Now the Illinois State Society has about eighteen hundred paid members.

Ohio, at the time of organization of component societies, had about two hundred and fifty members in good standing in its state society. Today it has approximately thirteen or fourteen hundred paid members.

Michigan, Iowa and other state societies have increased their membership in about the same ratio since organization of component societies.

Every state society in the Union (except Nevada, which as yet has no state society) is now affiliated with the National Dental Association. If the total membership in the National at present is twenty thousand, with only eighteen states organized into component societies, what would it be if the remaining states would organize? And not only this, but a complete organization of any state society means much to the profession of that state, especially when legislative and other important measures are sought.

For instance, the Ohio State Dental Society has a legislative committee, as do other state societies, and its component societies have each a legislative committee comprising a member from each county, where several counties are included in a component, or a committee of three where the component comprises only one county. Now in case of pending legislation that needs combined and immediate action on the part of the dental profession of the state, the state society committee notifies the various component societies' legislative committees, and within two or three days letters of approval or disapproval, as the case may be, come pouring in upon the members

of the legislature by the hundreds, voicing the desire of every member of the state society.

And here is where numbers count. A state society with only a hundred and fifty or two hundred members has, as a rule, but little influence on the legislators, but an organization comprising from one to two thousand members can make the legislators "sit up and take notice." Other state and component societies may already be organized in this way, but if there are not, they should be. When it comes to national legislation of interest to dentists, think what it would mean to have the individual support and influence of all the members of the National Dental Association thruout the states.

And this can be accomplished **if every state dental society will organize components and appoint a standing legislative or emergency committee in both state society and its components.**

Then the national society committee would notify the state societies' committees, and the state societies would notify the component society committees, and there would be an immediate and united response. And think of the influence this would have on Congress, whether the appeal be sent to Congressmen direct or thru the state chairman or other source.

We have demonstrated what an influence such an organization has had in Ohio in the past few years and realize what a power it would be to the profession generally if all states would organize in this way. Probably most of the states not yet organized into component societies will meet between this and the time the National has its next meeting, and we hope that they will look at the matter seriously **and organize at once.** It's a duty every state owes itself as well as the National Association. Every year matters of vital importance are coming up for action in Congress or some state legislature, and it is only thru a complete organization and united effort we can hope to obtain the full legislation and recognition the dental profession feels entitled to.

Preparedness League

PREPAREDNESS LEAGUE OF AMERICAN DENTISTS.

OUR FIRST BIRTHDAY.

By J. W. Beach, Chairman, Buffalo, N. Y.

THE Preparedness League of American Dentists was born in March, 1916, and came into being imbued with a great object and fathered by an underlying principle "as broad as space, as high as the heavens and as deep as from the surface to the center." Humanity's welfare is the foundation and Service is the password that admits our profession to its peculiar benefits. "He profits most who serves best" should be emblazoned on our escutcheon, for Success and Service are synonomous.

Perhaps you may reason that the foregoing statements look well in print and would sound better emanating from the pulpit on the Holy Sabbath day but are too altruistic and visionary for practical application. The experience of our first year's existence positively repudiates this viewpoint, for the dental profession of the whole country has rallied to our standard in that proportion by which they have grasped the significance of the great propaganda. Therefore we take this occasion to present to you a fairly comprehensive statement of the movement and trust your interest therein will lead you to the last word.

Our slogan: "Of our profession; for our profession and for our country if need be," practically eliminate boundry lines and opens our arms to every decent, self-respecting and profession-loving dentist of our great country. Fraternities, factions and personalities are not recognized or considered as such but the ever-living principle of equality and individual rights must be the main sheet to our bark. The source of knowledge must be open to all, otherwise our avowed principles are as "sounding brass and tinkling symbols" and we will gradually drift into a political slough of despond. This movement is destined to be the greatest unifying agency our profession has ever known, hence as individual members, we must exemplify that spirit of liberality toward our less fortunate brother which leads us to give freely of our own knowledge for his benefit.

The following classified objects of the League have been compiled by the Committee on Organization:

First, the teeth of candidates for the army and navy recruiting offices must be taken care of by the League members.

as outlined in the original objects of the League.

Second, the members of the various units should organize and zealously prosecute their study club course in war oral surgery, as outlined by the Committee on Organization.

Third, League members who can serve in the army are requested to send in their applications for the Officers Reserve Corps, Dental Section, and to prepare themselves thru the study clubs in war oral surgery to pass the army examinations.

Fourth, efforts should be made by members of this organization, and organizing and equipping dental units for base hospital or field service under the Red Cross auspices.

Fifth, to exert every influence with the War Department, the Council of National Defense, and the Military Surgeons on behalf of the establishment of dental units in the army and navy with fuller powers than have been accorded to the army dentists, in other words to allow the dental surgeon to be trained and equipped for the treatment of oral surgical cases, fractures, etc., much of the plastic oral surgery and all the mechanical restorations of the face, internal and external, including that of the nose and ears.

Sixth. Individual and collective efforts should be made by the members of the units of the League to impress upon the dental colleges the necessity of inaugurating comprehensive courses in war oral surgery, co-operating with the Preparedness League so that the graduate dental surgeon may not suffer the aparent handicap of not being fully prepared to cope with emergencies of war dental and oral surgery.

By these means only will the preparedness program of the Preparedness League be carried out, but an impetus will be given to the future necessary education of the dental surgeon so that he may assume and be accorded his proper rank in the sphere of clearly defined oral surgery in war and peace.

Twenty thousand circular letters were sent out to the members of the National Dental Association in March, 1916, and since that time the mouths of nearly fifteen hundred applicants for enlistment have been made fit for service by members of the League thruout the country, hundreds of whom have served and are now serving on the border. This work alone has made the League worth while.

Sectional Units for the study of oral and dental war surgery are being formed all over the country and it is this object that gives the League its most potent influence for good. Since Hunter made his sweeping denunciation of American dentistry, evidence has been accumulating, backed up by the disclosures of the dental radiograph, of our inadequate knowledge and inefficient ability to cope with existing conditions. For years we had felt secure in our own conceit that American dentistry had conquered the world, which fact served but to intensify the shock of our sudden awakening. The great European war has served to further disillusionize us and we now stand the anxious recipients of all knowledge that will be of service to us in the crisis which we are facing. The Sectional Units of the League furnish the logical solution and it is the duty of every dentist to avail himself of these splendid privileges. Six earnest men can derive as much benefit from a unit as a greater number. Thirst for knowledge is the prime requisite and the League will give every assistance in its power.

Every dentist who can qualify should join the Officers' Reserve Corps, Dental Section, and prepare to serve his country in his most useful capacity, when needed. No one will be called except in event of actual war and it remains a paper commission until that time. The dentist receives the rank of First Lieutenant and salary of $2,000 per year. Our ambition of giving our country the best Dental Reserve of any nation may be realized if we

unite to bring it about. Application blanks are furnished by the League, which we urge you to send for without delay.

Wherever Red Cross base-hospitals are being formed we urge our members to see that a Preparedness League dental unit is formed in connection therewith and co-operation is established between the organizations. This connection is important and should be promoted to the fullest degree.

The Council of National Defense furnishes another avenue for broadening our field of usefulness and we anticipate much benefit to our cause thru this connection. We hope soon to have a special committee appointed to forward our interests in this direction. Dr. E. C. Kirk, who is a member of our Advisory Board, is officially connected with the Council and is using his influence in our cause.

Thru the country-wide agitation of the subject of oral surgery by the League, it is hoped that our dental schools may find the demands for knowledge in this special field sufficient to warrant the introduction of a comprehensive course on oral surgery in their curricula. The time is opportune, particularly on account of the lengthened course which becomes effective next fall. By this means alone can our profession's standing be elevated to that level we feel it should reach.

The League is affiliated with the National Dental Association and its second annual meeting will be held at the Hotel Astor, New York, Oct. 23rd, 1917, at 2 P. M. Papers will be read and a surgical clinic will be given in charge of the Manhattan Unit of the League at one of the leading hospitals.

It is the desire of the organizers of the League to so plan our efforts that the National Dental Association will receive the benefits and credit therefore and that, as an affiliated body, we may wield a potent influence for the Association and thereby broaden its usefulness and give it a firmer position before the people as a public service institution. The League may be regarded as the melting pot for these numerous activities under the supervision of our National Association.

It gives as much pleasure and satisfaction to announce the addition of the name of Dr. Truman Brophy to our Board of Trustees. No comment is necessary to impress the profession with the value of this connection, for Dr. Brophy's name, work and ability is as familiar to the dental world as that of Washington or Lincoln is to the American people. His mature judgment and wise counsel will be of great value to us in all matters relative to the promotion of oral surgery.

Another source of benefit to us as individuals as well as to the profession at large, is in relation to our plan of obtaining necessary military instruction at the different training camps. This training may conform to that prescribed by the Council of National Defense in so far as it applies to our special needs. We strongly recommend this to the different units and have organized a committee to promote this phase of the work. Should it meet with the favor it merits among our members, we will endeavor to bring about the formation at each camp of a working dental unit fully equipped for service and introduce a course of practical field of training in connection therewith. Not only will this be of great benefit to the dentist from a physical standpoint but it will give actual knowledge of the work that may be required of him in service. Competent Army medical and dental surgeons will give instructions. All those specially interested in plan should write our headquarters expressing their desire to enter.

This comprises a general resume of our first year's work, however, it does not indicate the immense amount of detail required to accomplish it nor is mention made of the financial struggles and problems met. We thank our brother practitioners for their support, and urge those who have not joined to do so by sending one dollar to the Preparedness League of American Dentists, 131 Allen St., Buffalo, N. Y., Suite 3.

THE PREPAREDNESS LEAGUE OF AMERICAN DENTISTS.—ITS OBJECT AND WORK.

By C. L. Storms, Buffalo, N. Y.

(Read before the Fourth District Dental Society, Schenectady, N. Y.)

ALL men are not agreed as to the real purpose or value of preparedness as applied to our country in case of defense, but however men may differ on military preparedness, I am sure we are unanimous and united on any project that will make our profession more co-operative, efficient and serviceable to humanity.

Somewhat of the ideals, motives and purposes of the League you have gleaned from the many dental periodicals that have come to you during the past eight months, but in order that you may get a clearer conception of the movement and the reason of its appeal for your support, would say that the origin of the League took place last March. The impulse was purely a patriotic one, a keen and overwhelming desire on the part of the originators to arouse a fiery zeal among the men of our profession, to the point where they could be enlisted to give somewhat of their services and ability to the Government, in preparing the mouths of possible recruits to meet army requirements for enlistment.

It was a known fact that hundreds of young men, who were anxious to enlist, were being turned down because of a deficiency of the masticatory apparatus, for the reason that they had not the means themselves to have proper dental services rendered to put themselves into shape to meet Army requirements, and the Government having no facilities to take care of them, meant a great loss of available and worthy men.

Right here I want to say that the purpose of the League has been misunderstood by some. Dr. Ottolengui raised the question whether or not the League was compromising and pauperizing the Government? Not at all. The Government will not accept gratuitous service, which means that after a man has enlisted and has been accepted into the service of the Government, the Government will take care of him and be responsible for his maintenance and keep.

We had no thought of the man after enlistment, but we did desire to assist the fellow who was willing to come to the defense of his Country and put him in shape to meet the dental requirements.

The hearty and co-operative response furnished the incentive to go further and suggested the possibility of organizing in the various cities, Section Units or Study Clubs, thru which a course of study could be instituted and the various branches of Dental and Oral War Surgery could be taken up in a comprehensive manner and the requisites of the Dental and Oral War Surgeon in war times thoroly comprehended and understood.

From the very beginning of the war, our foremost thinkers and educators have realized the need of concentrating upon some system that would bring the American dentist to the realization of the part he would be compelled to play in case our country should be thrown into the throes of war. The Preparedness League of American Dentists is the logical solution of the whole question. Its motto or slogan is,—"Of the Profession, for the Profession and for Our Country, if need be." And that, together with the other thought, to give our country the best and most efficient Dental Corps in the world,

is sufficient to inspire every man who has real blood in him to back this to the utmost of his ability.

The League, at the suggestion of Major Robert Noble of the Surgeon General's Department of the United States Army, undertook a canvass of the various State and Component Societies of the National Dental Association to get a complete and accurate list of the oral surgeons in the United States. Our reports, up to date cover about three-fourths of the canvass and very few additions will be made to that list. Out of a membership of twenty thousand dentists furnished by the secretaries of the various societies, not more than thirty, strictly speaking, oral surgeons have been found or reported to us.

This canvass reveals to us a deplorable state of affairs and one hardly believable by the most pessimistic. The oral surgeon is in reality a myth or misnomer and the field of the oral surgeon is fast ebbing away from the profession. Ninety-five per cent of the Oral Surgery in the United States is being done by the General Surgeon, who, you must admit is far less familiar with the oral cavity than the dentist.

This canvass has also impressed us with the need of a wider horizon and the necessity of having the duties and requirements of the Oral Surgeon definitely and clearly defined. It has also awakened the profession to the need of post graduate courses for the seasoned practitioner, as a means to greater efficiency, skill and scholastic standing.

I wish particularly to call your attention to the statistics of Dr. Belcher in Oral Hygiene, January, 1917, issue, of the educational standing of the dentists in this country and then ask yourselves this question,—If we do not bestir ourselves to bring such changes into the profession as will improve and lift us into higher planes of thought and endeavor, what shall be the result?

At the sectional meeting of the Preparedness League held under the auspices of the National Dental Association at its meeting last July at Louisville, Ky., one of the senior ranking dental surgeons of the United States Army in his address emphatically stated that the dental profession has relatively no oral surgeons and that if we, as a profession, did not accept the opportunity afforded thru the plans of the League, the medical profession will, in consequence, control the field of oral surgery and we can never thereafter, as a profession, occupy our rightful place. All dentists recognize the fact that we have not assumed the position our great profession offers. We have rather contributed to the mechanical principal and practice, while the surgical and therapeutic side has been practically left untouched. In other words, dental and oral surgery and therapeutics should form the basis of the superious structure of the activities of the dental profession and all else should be a corollary to the main proposition.

As a scientific proposition we have developed the mechanical to a nicety and left to the medical profession and manufacturing agents to instruct us in the many branches of research investigation and therapeutics, which, had we developed thru the surgical field, would have placed us in the fore as a natural result of experience, investigation and skill. This, we believe, may be adjusted thru the earnest activities and co-operation with the plans of the League.

That the purposes of the League meet with the general approval of the profession there can be no doubt, for we are in receipt of letters from the foremost men of the profession, approving the formation of the Sectional Units and a prescribed course of post graduate study, which will evenuate in the formation of the best and most scientific Dental Corps in the world.

Two of our most prominent Deans of Dental Colleges in the United States remarked to the Chairman of the League

that the work of the League would evenuate in a comprehensive course of study in oral surgery in all dental institutions in our Country.

The League, sensing the responsibilities that the American dentist would have to assume in case of war, and realizing his serious lack of unpreparedness, proposes a synopsis of a study course which can be taken up by the various Sectional Units, whereby general information can be obtained and where the more ambitious and studious can carry it out in more minute detail. The object of the League is to restore to the Dental Profession the field of Oral Surgery and have our profession ready when our Country calls, whether in times of peace or war. In other words to establish a post graduate course of instruction for the mature dentist in specialized work.

Quoting from an editorial by Dr. Edward C. Kirk, in the December Cosmos, he says: "It has been demonstrated that while the service of the dentist in war hospitals is an indispensible service the training afforded him by the dental school plus his training derived from experience of private or ordinary hospital practice, are, together not sufficient to fully equip him for efficient service in dealing with the cases with which he is confronted in a modern war hospital and that to efficiently solve the surgical problems there presented, the dentist needs a specialized training; the means for acquiring which are not as yet available in any adequate degree. It is true that practice as an interne in a modern war hospital furnishes the best type of training in the "hard school of experience" but it must be borne in mind that a hospital is not primarily nor essentially a school, but is a humanitarian institution where the sick and injured should receive the best care and attention that the centers of education can supply.

It is this fundamental educational need that has inspired the Preparedness League of American Dentists to suggest the establishment of Sectional Units thruout the country. These units are to be organized under the supervision of groups of specialists who will direct the studies of those who wish to prepare themselves to meet in a practical and efficient way, the growing demand for competent dental and oral surgeons in State and National Army Service."

We wish to emphasize Dr. Kirk's thought that the hospital is a place where the sick and injured must receive our best service and not furnish a school of experimental training for the dentist as would develop did we not prepare him thru the means offered by the League, to fulfill the highest mission and usefulness of our profession.

The Government has been deeply interested in the work of the League and fully appreciates all that is being done to instruct the profession in Dental and War Oral Surgery. Major Noble of the Surgeon Generals' Department, has practically acknowledged that it must depend upon the efforts of the Preparedness League to fill the Officers' Reserve Corps of the Dental Section with capable and representative men.

Perhaps just a word regarding the Officers' Reserve Corps of the Dental Section might not be amiss. Under the new law those desiring to enlist in the Dental Section will do so under the commission of First Lieutenant and possible advance to that of Major. A salary of Two Thousand Dollars a year is allowed when in active service, together with headquarters and incidentals. This strictly speaking, is a paper commission and the dentist will be called on for compulsory service only in case of actual war. I understand there is neither number or age limit.

This gives us a splendid opportunity to serve our Country in the most useful way possible and surely we all would prefer to be commissioned and follow our field of endeavor, rather than being

drafted as a private. Hence the League feels justified in promulgating the movement to give our Government the largest best equipped and most representative Dental Corps of any Nation in the world. Your individual effort and support will make this an actuality, which will redound to the credit and glory of the greatest of all professions.

We wish it correctly understood that the Preparedness League of American Dentists is affiliated with the National Dental Association, thru an Advisory Committee, appointed as per a resolution of the Association, which is composed of Dr. L. L. Barber, President of the National Dental Association; Dr. E. C. Kirk, Dean of the University of Pennsylvania, Dental Department; Dr. H. E. Friesell, Dean of the University of Pittsburgh; Dr. H. L. Wheeler, College of Oral and Dental Surgeons, New York City, and Dr. S. D. Boak, Dental Corps, United States Army.

This Board will act on all matters of importance in conjunction with the Board of Trustees and Committee on Organization, consisting of Dr. T. P. Hinman of Atlanta, Ga.; Dr. Otto U. King, Huntington, Ind.; Dr. F. W. Low, Buffalo, N. Y., and Dr. H. P. Burkhart, of Batavia, N. Y., Trustees. Committee on Organization Dr. J. W. Beach, Dr. H. A. Pullen and Dr. M. B. Eshleman, all of Buffalo, N. Y.

The Journal of the National Dental Association will be the official organ of the League, which will each month contain all matters relative to the Sectional Units and a synopsis of the course of study from month to month. This course is being standardized under the supervision of Dr. Kirk and the Faculty of the University of Pennsylvania, together with the foremost dental educators of the country.

In a recent interview with Dr. Kirk, the Chairman suggested that he standardize the course of training or study of the League and make the great Evans Research Institute, the fountain head of research and post graduate school of instruction for the mature practitioner, to which Dr. Kirk readily assented and is utilizing the wonderful resources of the splendid faculty of the Dental Department of the University of Pennsylvania for this purpose.

This, I believe, fully explains the object and purpose of the League, the status of the same and the necessity of its appeal to you to assist in restoring to the profession its true aim and fullness of its usefulness to humanity.

We want a Sectional Unit in every city or locality where it is possible and in order to organize the same, we must first become an active member of the parent organization. The fee is One Dollar and is paid at once. This is merely to provide for postage, printing and other incidental expenses, unless when the permanent organization is perfected in New York City, when it might be decided to have a stipulated yearly fee.

The Sectional Unit being local, its character is regulated according to the wishes of its members and the fee is usually One Dollar, which may be paid yearly but this must be governed accordingly to your need.

The League being an affiliated body of the National Dental Association makes it imperative that we take no one outside of that membership. This is to be regretted in a way, yet it is necessary in order to carry out our aims and purposes.

You may feel that your territory is limited for a Sectional Unit. It is not necessary to depend upon numbers. It will be your enthusiasm, devotion and loyalty rather than men which will ultimately spell success. You will be surprised at the latent talent developed among your own members and gratified at the earnest and hearty co-operation of the medical fraternity, who will deem it a favor to assist and instruct you in every possible way. It is the need of this kind of co-operation among ourselves and a better understanding with the med-

ical fraternity that is required to fully equip us to meet the rising emergency of our profession.

It has been said that we are inadequately educated as a body of men to meet the great responsibilities daily enveloping us from the standpoint of oral surgery. Let us grasp this great opportunity to make ourselves "Worthy of the hire." There is no other solution and quoting in the words of the valiant knight of old, "By this sign we conquer."

MILITARY TRAINING.

By Howard H. Gross, Chicago, Ill., President of Universal Military Training League.

WORLD conditions are so unsettled no one can savely forecast the future even for a few weeks. We may at any time be forced into war. The likelihood of this decreases in proportion to our ability to defend ourselves. On the contrary, the weaker we are the greater the danger is. This is so clear that it requires no argument. As a people we abhor war, we will do anything honorable to avoid it.

But a situation may easily and speedily arise where we must fight or crawl. The fact that we are peaceful does not insure us peace. Belgium and Servia were both peaceful and peace-loving, but they were driven into war and then both countries were laid waste.

War as now conducted in ruthless and cruel beyond description. It is a combination of men, machinery and chemicals. It is fought on land, in the air, on sea and under sea.

Only those trained to modern warfare can be of use in defending the country. In Revolutionary days General Lee of Washington's army when war was camparatively simple said: "A nation is a murderer which sends its own citizens uninformed and uninstructed into war." This was true then and it is true with emphasis today. A government of the people and by the people presupposes a fair and equitable adjustment of duties and obligations. It does not mean that some shall serve while others shirk. but it means a rule of the majority and the service of all.

Why should patriotic George fight to protect shirker Bill? Nothing is fairer than the proposal that, as the flag protects all, it is the duty of all to defend it.

We insure our houses and barns against fire because they may burn. Why should we not insure our national peace? There is only one way to do so and that is by being ready and strong enough to meet any emergency. Strength thru preparation means peace.

Uncle Sam will never engage in aggressive warfare. The people would not have it. Have we any assurance whatever that we shall be immune from attack? It may come from the Atlantic but more likely from the Pacific. The oceans, as Dr. Eliot, President Emeritus of Harvard University, says, are no longer barriers of defense, but highways over which ships hostile or friendly may come. His conclusions are that national safety lies in prompt and adequate preparation for defense against invasion.

Any one of four countries of Europe and at least of Asia could in thirty to sixty days successfully land a seasoned and fully equipped army of 200,000 or more upon our shores, and double the number within a few weeks.

The above is not guess work but is based upon expert opinion, and we know that at least one great nation some time since worked out a complete plan of invasion in its war college and those who know say the plan will work!

We should remember that the liberty and blessings we enjoy were fought for and secured in the mighty struggle from Bunker Hill to Yorktown and from Bull Run to Appomatox. It is for us to defend this heritage and pass it on to our successors.

The first step to insure peace is a system of universal military training wherein all young men, say at nineteen, who are physically fit shall have six months of instruction and training wherein all young men, say at nineteen, who are physically fit shall have six months of instruction and training in a United States military camp. This will do several things. It will give the boy a finer physical development than he could get in any other way. It will teach him respect of authority. It will instruct him how to protect himself in camp or on field. It will make the bad boy good and the good boy better. It will develop the best that is in him, and finally, if war should be forced upon us, the training will make him an able defender. The chances of a trained man in war coming out unharmed by the enemy or by disease are two or three times better than for one untrained.

Under the law today every young man when he reaches the age of eighteen becomes automatically subject to military duty whether trained or not. There is no escape in case the country needs him. Training, therefore, will not only humanely economize in lives but will be an all-protecting aegis for the nation.

The Research Department

CONDUCTED BY

THE RESEARCH INSTITUTE OF THE NATIONAL DENTAL ASSOCIATION

WESTON A. PRICE, M.S., D.D.S.

President and Managing Director

CLEVELAND, OHIO

REVIEW OF DR. F. A. FAHRENWALD'S METALLURGICAL STUDIES.

Cleveland, O., June 6, 1916.

Dr. W. A. Price, President Research Institute, 8805 Euclid Ave., City.

Dear Sir: It is my desire to give at this time, in addition to an outline of recent researches, a brief resume of what has been accomplished during the time of my connection with the National Dental Association.

My discoveries and inventions of major importance have finally been covered by various patent applications made thru Mr. Smith of the firm of Hull, Smith, Brock and West. This includes six separate specifications covering all positive results that either the Research Institute or its attorneys considered of sufficient value to warrant patent application.

It may be well to emphasize at this point, that at the time of the development of each of the materials and processes herein-after described, it was urged by himself and by others in my presence, that they be immediately protected by law. It is not known at this date what results have been obtained from belated action in this matter.*

The applications may be described as covering the following:

1. **Palladium Alloys.**

This includes the alloys of palladium with gold or silver which have been described in previous reports. I regard these alloys of very great values and for many purposes the equal of platinum.

They serve as an efficient substitute for platinum in its softer forms, and under conditions involving temperatures from 1100 deg. C. to 1500 deg. C. My observations of their behavior during various tests indicate that they will also find wide application in fields other than dental.

These alloys were developed during the latter part of 1913 and the first few months of 1914.

2. **Coated Tungsten and Molybdenum.**

This material has been described in

*Managing Director's Note—These patent applications are assigned by Dr. Fahrenwald to the Research Institute of the National Dental Association, which in turn is dedicating them to the free use of humanity. Until the organization of the Research Institute there was no corporation competent to receive and dedicate patents.

detail in former reports. The proper rights to the manufacture and use of this material have been lost to the dental profession by neglect in securing the proper protection.

Work on this material was begun in November, 1913, and the process of coating was proved on a laboratory scale before January 1st, 1914.

3. **Solder and Flux for Tungsten and Molybdenum.**

This has been completely described in a preliminary report to the Research Institute. This earlier communication outlined the theoretical considerations upon which its composition is based, and contains detailed instructions for its manufacture and use.

With this material, tungsten or molybdenum, or any substance of a similar nature, may be readily soldered, brazed, or otherwise joined during constructional operations.

This material and dependent processes were developed during 1914-15 while in the laboratories of the University of Michigan.

4. **Coating Tungsten and Molybdenum with Precious Metals by means of the above described Flux.**

This process is fully described in patent specifications. It was developed after learning that the previous processes for coating tungsten had been appropriated by a commercial organization.

5. **Tungsten and Molybdenum Alloys and**
6. **Process of Manufacture.**

Results of work under this head have been fully described in a recently published report, and are covered by patent applications.

The patent applications covering the above materials and processes have been dedicated to the free use of the public. There remains to be considered the results of investigations which have not as yet been formally reported. This work may be briefly described under the following heads:

1. **Ternary and Quaternary alloys of Palladium with silver or gold. This list includes:**

Palladium-Gold-Nickel
" " Copper
" " Copper-nickel
" " Cobalt
" " Cromium

Palladium-Silver-Nickel
" " Copper
" " Copper-nickel
" " Cobalt

The above systems were worked thru in varying percentages but not one offered advantages for dental uses over the binary system.

Platinum substitutes for dental purposes should be either very soft and flexible, or very hard and elastic. The addition of a third or fourth metal of a base-metal nature, destroys the desired softness and does not impart sufficient stiffness to enable the more complex alloy to serve as a platinum-iridium substitute.

The combination of these binary series with noble metals of high melting point appears more promising, but the high cost incidental to research in these fields, together with insufficient appropriation, prevented a continuation with noble metals; work being taken up in other fields as follows:

2. **Nickel-Tungsten.**

The investigation of this series yielded results of negative value. The following system also offered nothing of value in the nature of alloys applicable to dentistry.

3. **Nickel-Molybdenum.**
4. **Nickel-Tungsten-Copper.**
5. **Nickel Molybdenum.**
6. **Copper-Aluminum.**

This system, in the range between 8% and 12% of Aluminum, yields a series of gold-colored, steel-like bronzes, which

were considered of possible value as practical dental alloys. The ease of their oxidation and corrosion, however, caused them to be discarded.

7. The Elimination of a vast number of uncertain fields as described in earlier reports.

The methods of investigation, and the principles governing the choice of fields for investigation, have been detailed in previous reports, so that it is considered unnecessary to give more than a statement of the fields covered and of the nature of the results obtained.

Positive results have already been described, and negative details are of no value except in the elimination of unprofitable fields in future researches.

For future consideration I would recommend the following general outline:

1. The introduction of palladium alloys (especially those with gold) into general dental practice.

2. The investigation of causes for failures in the use and application of dental alloys and metals.

3. Researches in the field of refractory metals.

4. The Adaptation of tungsten and molybdenum alloys as material for pins in commercial porcelain teeth.

5. The determination of physical and chemical properties of commercial and the newly developed dental products.

6. The development of a low melting-point cast filling material, that will not corrode or tarnish.

7. The development of an amalgam that will not blacken in use.

The researches of this laboratory during the past two and a half years have served to concentrate considerations for the future to fields of rather narrow limits, so that work of a more intensive nature will now be possible. The solution of the problem of platinum and other substitutes, and that of the development of new and valuable materials, is no more than begun, and the unhampered application of scientific knowledge and methods will be found to unearth many new materials and processes that will find wide application in curing and preventing the ills of mankind.

Yours very sincerely,

F. A. FAHRENWALD.

A STUDY OF THE PATHOLOGY OF THE PERI-DENTAL MEMBRANE.

By Frederick 'B. Noyes, B. A., D. D. S., and Kaethe Weller Dewey, M. D.

(Researches conducted under the auspices of the College of Dentistry of the University of Illinois and the Research Institute of the National Dental Association.)

INTRODUCTION.

THE diseases of the supporting tissues of the teeth have attracted a great deal of attention, especially in the last few years, and writings on these subjects constitute a considerable proportion of dental literature. These writings have been based practically entirely on clinical observation. Conflicting theories as to the etiology of these conditions and widely different methods of treatment have all been based on more or less accurate clinical observations and deductions from them. We have been unable to find in English any study of the changes that occur in the structure of the human tissues in these conditions.

For the rational treatment of any diseased condition one of the first requirements is a knowledge of the normal structure of the tissue and the changes which occur in the tissue during the progress of the disease. By this study we may form some opinion as to how far the changes from the normal structure may proceed and still a resolution to normal conditions be possible. Especially in the subject under consideration, this is the only rational basis for treatment. Certainly in the past, one of the commonest of mistakes has been the attempting of the impossible.

The collection of material has been rendered exceedingly difficult because of certain provisions of the law, and much time has been wasted in fruitless attempts. Finally thru the assistance of Dr. H. Gideon Wells, Professor of Pathology in the University of Chicago, we were able to obtain the present series of material. The age of the patients from whom this material was obtained ranges from about 20 to more than 70 years of age, and represents many grades of local condition.

In presenting this study the authors realize its incompleteness and that a great volume of such work must be done before we will have any adequate basis upon which to establish clinical treatment and interpret clinical observations. For future work it would be exceedingly valuable if much more perfect dental history could be obtained. We were dependent upon what observations could be made at the time the material was obtained and what data the clinical history of the hospital furnished. In the present material a number of things are noted, a satisfactory explantion of which is impossible at the present time.

In recent years pyorrhea alveolaris has received great attention from the dental as well as the medical profession, and the literature on this subject is accumulating at an increasing rate from year to year. These publications treat the subject almost exclusively from the etiologic, bacteriologic, clinical and therapeutic standpoint. Of late the importance of the relationship of pyorrhea to systemic diseases has been particu-

larly emphasized, with the happy result of bringing the medical and dental professions into closer touch and encouraging both to co-operation in scientific and practical investigations. In view of the very numerous contributions to our knowledge of pyorrhea it is the more remarkable that the anatomic microscopical aspect of this condition has been almost entirely left out of the field of investigation. To our knowledge Römer[1-2] is the only one who has published detailed descriptions and illustrations of the pathology of pyorrhea. The nature of this disease, however, can only be clearly understood, if we are familiar with the pathology involved. Without an accurate knowledge of the anatomic microscopical findings and an understanding of the etiology and pathogenesis, the treatment of pyorrhea cannot but be haphazard, and up to date it is still a problem which the majority of practitioners consider as beyond the possibility of solution, it is at best a groping for measures, which at times meet with success, but more often entirely fail.

There is no agreement yet among authors as to the causes of pyorrhea. Some consider it a purely local condition, others as secondary to constitutional diseases; a third group, which has the largest number of followers, admits both causes to exist, i. e., they believe that a local irritation is the exciting cause, which, however, is effective only in the presence of an individual predisposition thru general disturbances. But whatever view we hold there are observations which it is difficult to explain on any theory. Grave cases of pyorrhea occur in which not a hint of a general disturbance nor local causes can be discovered. Sachs[3] calls attention to the fact that pyorrhea is generally found around the healthiest teeth, while those with extensive caries and dead or carious roots are often spared, so that pyorrhea and caries seem to directly exclude each other in many cases. Those who believe the causes of pyorrhea to be purely local, point to the observation that it is found both in healthy and in sick people. Extensive investigations with this point in view have been made by Hungarian writers, chiefly Arkövy and Karolyi, and the prevailing conception among Hungarian scientists and practitioners still is that pyorrhea is a purely local disease and should be treated as such. Malposition, malocclusion, and abnormal dental conditions of any kind are considered by some as the causes without exception; others admit mechanical irritants independent of the condition of the dental apparatus. Landgraf[4], who supports the local theory, evidently assumes two types of pyorrhea. He claims that the course and clinical aspect of a pyogenic infection of the alveolar process occurring in such conditions as diabetes, leukemia, etc., as the result of a lowered resistance is entirely different from that of pyorrhea not complicated by general nutritional disturbances. It runs a graver and more violent course. The morbid processes are not limited to the peridental membrane, but spread rapidly in all directions, irresistibly and unrestrained, with the tendency to ulceration and without an inclination to heal, even when the involved tooth is extracted. In case of recovery from the constitutional disease, for example from mercurialism or scurvy, there is rapid spontaneous healing of all morbid conditions in the mouth; ulcers are covered with a new membrane and loose teeth become firm again. The symptomatic aspect of pyorrhea is entirely different. The course is one extending over many years; the processes do not show any tendency to lead to ulceration. Granulations are only found

[1]Peridontitis (chronica marginalis purulenta) und periostitis, alveolaris, Scheff's Handbuch der Zahnheilkunde, 1909, H, 1 Abt: p. 576.

[2]Ueber Alveolarpyorrhoe, Schweiz. Vierteljahrsschr. f. Zahnheilk, 1903, XIII, 1.

[3]Aeotiologie und Therapie der Pyorrhoe alveolaris, D. Zahnheilk, 1911, XVII, 1.

[4]Welche Rolle spielen Konstitution und vitale Energie in der Alveolarpyorrhoe? Oester Zeitschr. f. Stomatalogie, 1911, XIV, 564.

in the pus pockets and in the peridental membrane; they progress slowly until they have reached the apex of the root. As soon as the tooth falls out or is extracted spontaneous recovery takes place within a very short time, and as long as the tooth remains in the jaw recovery is impossible. Most of these patients are not aware of any sick feeling except about the involved tooth; they are well and able to work and may reach an advanced age, with or without teeth. As a matter of fact the larger majority of cases of pyorrhea occur without a demonstrable lowered local or general vitality. This is simply and naturally explained by the peculiarity of the anatomical conditions and the possibility of a constant reinfection. The calcareous deposits on the root in conjunction with infectious material invading the gingival space incessantly act as an inflammatory irritant on the peridental membrane which renders the healing and the treatment difficult. But even when the latter is successful, we are unable, on account of the peculiar anatomical conditions to prevent a reinfection and consequently a recurrence. In this way pyorrhea acquires, in its course and treatment, the peculiar character which we are otherwise accustomed to find in local diseases on a constitutional basis. Landgraf admits, however, that pyorrhea, altho pre-eminently a local disease, may, of course, also occasionally occur in a diabetic or a gouty person. In such patients the conditions of nutrition for the micro-organisms of the mouth may be different; the bacteria may undergo great alterations as to kind and virulence whereby also the conditions for the development of pyorrhea may be essentially changed.

An equally extreme stand is taken by some of the authorities who believe that the chief causes of pyorrhea are constitutional diseases. Adherents of the third group emphasize the existence of a predisposition for pyorrhea from nutritional disturbances and point to the fact that the same irritation which produces pyorrhea in a person predisposed by a general disease, is entirely ineffective in a healthy person.

Accepting this view as the more general the development of pyorrhea may be conceived to take place in the following way: A certain individual predisposition lowers the vital energy of the cells of the tissues in general. A chronic irritation or a chronic trauma is inflicted on the gingival tissue which further reduces the diminished resisting power of the cells so that they are no longer able to cope with the aggressive action of the pyogenic organisms which are constantly present in the oral cavity. Accordingly the disease is generally not limited to a single tooth, but most often involves whole groups of teeth, in severe cases even all the teeth of both jaws. The organisms invading the gingival space loosen or destroy the strong fibers of the circular ligament; destruction of the peridental membrane and of the bony walls of the alveolar process follows and the teeth are loosened.

Struck[5] offers the following explanation for the development of pyorrhea: The gingival tissue consisting of a mucosa and a submucosa, has very narrow blood vessels; under normal conditions it is firmly attached to the alveolar process and to the teeth. The pushing forward of a foreign body, like calculus, beneath the gum tissue, has a direct effect on the circulation. If it is hard, it will act mechanically, if soft and acid, as a chemical injury. The mechanical irritation from calculus results in constriction of the normally narrow blood vessels; the elasticity of the vessel wall is lessened and finally destroyed The result is stasis in the vessels, followed by transudation of blood serum, and exudation. Blood serum, however, as we know, is the best culture medium for micro-organisms.

As to the etiology, all injurious agents

[5]Die Alveolarpyorrhoe, D. Monatsschr. f. Zahnheilk, 1914, XXXII, 293.

capable of producing an inflammatory condition of the gingiva, may, if persistently acting, lead to pyorrhea, as soon as the balance between the vital energy of the cells and the aggressive action of the micro-organisms is disturbed. The most important and the most frequent cause is calculus deposit in the gingival space, which has the tendency to grow down, loosen and destroy the marginal ligament. If the resisting power of the tissue cells is normal, calculi do not always lead to pyorrhea, even if they expose the surface of the root and almost reach the apical foramen. A purulent gingivitis may result, but not necessarily a purulent breaking down of the peridental membrane and the bone. In old people we see many cases where scarcely a trace of pus is found and the amount of calcareous deposits present is enormous. With them the atrophy of the alveolar process and the retraction of the gingiva is a physiological process. Altho in cases with predisposing constitutional disturbances calculus is the chief factor in producing pyorrhea, there are many people afflicted with this disease who scrupulously take care of their teeth and who have no calcareous deposits. With such people even the slightest local irritations like daily injuries in the process of chewing or from the tooth brush are sufficient to induce pyorrhea, because general nutritional disturbances have lowered the vitality beyond the power to resist bacterial aggression.

It is an interesting observation, for which Römer has advanced an explanation, that pyorrhea does not occur in children and individuals still at the developmental age of life, however bad their teeth or the condition of their mouths. In rare cases it is observed about the eighteenth year; but it becomes more general only after the thirtieth year, i. e., when growth is completed. The reason for this is to be sought in the peculiar conditions and activities of the bony structures, according to Römer. In the growing individual the bony alveolar wall is very elastic and the vital energy of the cells completely counterbalances the aggressive energy of the infective organism. As growth is completed the bony wall becomes rigid and firm and with the lessened cellular activity the resisting power of the tissue is reduced. Thus age alone creates the condition for a locus minoris resistentiae and constitutes an etiologic factor in pyorrhea.

A discussion of the parasitic side of the question would lead too far and will not be attempted. It can be safely said that in spite of the extensive bacteriological investigations the specificity of any of the organisms isolated cannot yet be accepted. But in connection with the foregoing discussion of the local and general factors governing the pathogenesis of pyorrhea, we would mention statements from a publication by Proskauer[6]. This author made the Wassermann test on 16 patients with gingivitis, stomatitis and pyorrhea. Four of these cases gave a negative, all others a positive reaction. Five of the sixteen patients had lues, two of whom gave a negative reaction; seven were not syphilitic, one was a doubtful case, three had had malaria. He claims that since the Wassermann reaction is a reaction to protozoan infection, and since a positive Wassermann reaction may be obtained in patients who have no sign or symptom of sickness except the diseased gingiva, such reaction indicated that protozoa may be taken into consideration as the exciting agent in gingivitis, stomatitis and pyorrhea. These conditions of the mouth, he concludes, are not local, but are diseases of a general nature. Bergeat is quoted by him to have found protozoa in all the sixty cases of pyorrhea which he examined, and Gerber to have observed an influence of 606 on the mouth spirochaeta; according to him the pathogenic spirochaeta are at least rendered inocuous.

The aim of our work has been a study

[6]Die Bedeutung der Wassermannschen Reaction für die Zahnheilkunde, D. Zahnheilk, 1912, HXI, 1.

of the pathology of the peridental membrane in all sorts of general and local diseases and we have not limited ourselves to pyorrhea alone. We obtain our material at autopsies from 24 bodies which were not selected according to the condition of the mouth, but taken in their regular order. The clinical and anatomical diagnoses were recorded in every case. Pieces from the jaw, including one or two teeth with the soft tissue around them, were excised by means of a sharp chisel and hammer and dropped at once into Zenker's fluid. They were, as a rule, taken from the left lower jaw, the teeth removed being the bicuspid and first molar; in a few instances the lower incisors were taken. We have thus been able to study the various types of chronic inflammations of the peridental membrane, marginal periodontitis, and pyorrhea alveolaris proper. While our material does not cover apical periodontitis, it may be worth while to give a summary of the etiology and genesis of the latter, which is not entirely the same as that of pyorrhea. Mechanical and chemical injuries play an etiologic part as in pyorrhea; but the infectious origin is by far the most frequent, and the most common portal of entrance is the apical foramen in cases of pulpitis. Relatively rare is an extension from the gingival space of the alveolar border, for the ligamentum circulare is a powerful barrier to bacterial invasion. The character and intensity of the inflammation from pulpitis depend largely on the nature of the inflammation of the pulp. The determinating factors are not the number of bacteria present in the infected pulp, but to a large degree on the products of putrefaction. Portions of inflamed or purulent pulps or pure cultures of bacteria from such pulps are not as virulent as portions from gangrenous or putrefactive pulps which may be almost free from micro-organisms.

Altho bacteria perish in a completely gangrenous pulp, there is a possibility for the bacteria at the apical foramen to continue their existence on account of the continual exchange of the contents of the root canal and the tissue fluids, and these bacteria, however small their number, are sufficient to infect the peridental tissue which may be in a state of continual irritation and inflammation, produced by the products of putrefaction from the pulp. Such inflammations may be caused by toxic gaseous substances, which, accumulating in the root canal and exerting a certain pressure, may escape thru the apical foramen, or small portions of the gangrenous pulp may be forced thru the opening at the apex by pressure expansion of the gases or pressure exerted on the contents of the root canal in the process of eating or in dental treatment.

The periodontitis resulting from infections of the pulp may be acute or chronic. The stages of the former are described by Römer as (1.) hyperemia and serious effusion of the peridental membrane ; (2.) as pus formation in the peridental membrane; (3.) entrance of the pus into the bone and a passing over of periodontitis into periostitis with abscess formation. In most cases the pus formation remains limited to the region about the apex of the root. If the process, however, is not halted, the increasing pressure pushes the pus in the direction of least resistance, i. e. towards the medullary spaces of the alveolar process. The moment when pus begins to enter the bone, an exceedingly rapid and extensive resorption of bone sets in, as Römer has pointed out.

Chronic periodontitis frequently follows the acute stage; but it may be chronic from the beginning. The characteristic features of chronic periodontitis are general thickening of the peridental membrane, hypertrophy of the cementum, or formation of small granulomas and root cysts. In the region where the root is denuded from the peridental membrane, we find in its place a spongy, easily bleeding granulation tissue which covers the wall of the alveolar process and penetrates into the medulary spaces of the

bone. This granulation tissue is pervaded by pyogenic elements and gradually causes more and more of the bone to be destroyed. Römer considers as characteristic of pyorrhea that from any place in the gingival space to the apex of the root and along the sides of the tooth the peridental membrane is invaded successively by small cell infiltration and is being gradually transformed into granulation tissue. This is covered by epithelium which grows downwards from the gingiva and gradually pushes the peridental tissue away from the root. This, exposed and bathed in pus, is covered with cement-like concretions. The most important and most interesting histological finding in pyorrhea, according to Römer, is a peculiar type of osteomalacia or halisteresis. He observed that the osseous trabecula of the alveoli disappear in the neighborhood of the granulation tissue and that in their place, in exactly the same arrangement, strands of dense connective tissue appear which are continuous with the still existing bone travecula and pass directly over into Sharpey's fibers and the inner periosteum of the bone trabecula. "We must therefore assume," he writes, "that in pyorrhea a peculiar type of local osteomalacia or halisteresis occurs, in which the bone trabecula of the alveolar process are deprived of their calcareous substances and are transformed into connective tissue strands." It differs from osteomalacia in other parts of the body in that only those parts of the bone trabecula lose their calcium salts into whose neighborhood the granulation tissue has advanced, while the remaining portions of the same bone show perfectly normal bone tissue, so that alterations of the bone cells occur only immediately at the border line, i. e., at the place of transition of bone trabecula into fibrous strands.

In hyperplastic chronic periodontitis, whatever the degree of hyperplasia of the cementum, there is never synostosis between the cementum and the bone. It is a "striking" observation, according to Römer, that the very numerous processes of the cement corpuscles are all directed towards the peridental membrane. Like Nessel he has sometimes found tubules in the layer of hyperplastic cementum which resemble the canaliculi of the dentine. In a high grade hypertrophy of cementum he also found blood vessels at the periphery of the hyperplastic zone of cementum like those in the cementum of the molars in horses. Cementum and bone are therefore closely related according to him.

In this country E. S. Talbot carried on some experimental work on dogs, the report of which was embodied in a monograph entitled "Interstitial Gingivitis, Phil. 1899."

(To be Continued.)

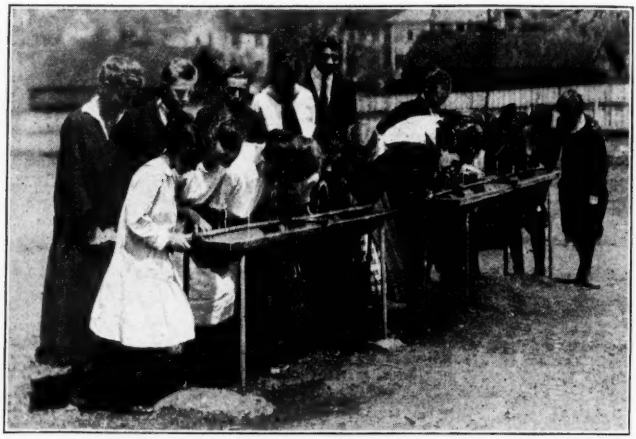
TOOTH BRUSH DRILLS IN SOUTH CAROLINA.

By Ernest C. Dye, A. B., D. D. S., Greenville, South Carolina.

The dentists of South Carolina have been imbued with the Oral Hygiene Propaganda carried on in the North, as a result of which Dental Inspection and Tooth Brush Drills have been instituted in some of the public schools of this state. They were first placed in the schools of Greenville. Since then they have spread to other cities not only of this state but neighboring states. These drills are inexpensive as the "cut" will show, 20 or 25 dollars being the total cost. They are simple in design and easily constructed. This particular trough is built in an "L" shape (for convenience), made of galvanized iron, supported by "I" inch iron pipes, fastened to the floor; over the center of which runs a pipe that is perforated at six inch intervals. This carries water for the drill. These jets of water stream at such an angle that they cleanse the sides and bottom of the trough, which is slightly inclined so that the "used" water rapidly passes away. A squad of children, thirty in number, is marched up to the trough, water is turned on, the teacher standing in full view, brushing her teeth in pantomime, counts for the children as they go thru the various movements. We are endeavoring to have formaldehyd sterilizers placed in all schools with the toothbrush drills, to care for the tooth brushes; wherever this arrangement is not carried out, the brushes are kept in cylindrical cases perforated at either end, the owner's name on the brush handle as well as on the holder.

We acknowledge the assistance and encouragement received from the Medical Profession, the Woman's Club of Greenville, and the Woman's Federated Clubs of the State. When the movement was placed before them, they immediately saw their need, and have labored earnestly in this great cause; (as encouragement to any public spirited dentist, or dentists, let me say; get the co-operation of the ladies in your community, they are more easily appealed to, they are "nearer" to the children than are the men, and will more quickly respond, thus the success of your campaign).

It is the experience of the writer that when Dental Inspection and the Tooth Brush Drills cannot be combined, or when both cannot be accomplished, that the latter are to be preferred, that they



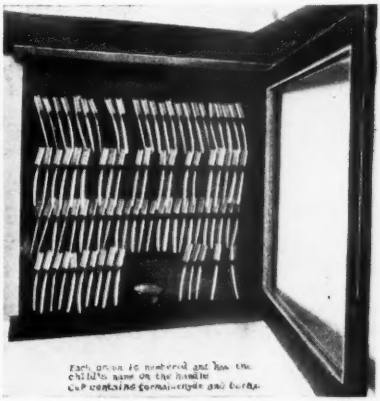
Drinking Fountains in use in the Public Schools of South Carolina.

Tooth Brush Drills in use in the Public Schools of South Carolina.

are the more easily instituted. Dental Inspection requires the dentist to leave his office, which is not practical, unless Civic Authorities engage him; while the tooth-brush drills can be placed and managed by the Woman's Club or those in charge of the schools.

This sanitary idea is further stressed by the use of drinking fountains which are stationed in the building, also different quarters of the play grounds, you will note in the illustration that they are simple in construction and serve the purpose.

These drills save the children from pain, disease, and loss of time from school, and inculcates into them a good habit which will remain. Let's have more of them! God speed the day when every school in this broad land of ours will have Dental Inspection and Tooth-brush Drills; may those eleemosynary institutions (Forsyth and Eastman), founded thru dental influence ever be a source of inspiration to men of our profession to co-operate in this work until all humanity has been taught that the blessings of health are to be derived from the practice of Oral Hygiene; then will Dentistry fulfill the great mission for which she is destined.



Formaldehyd Sterilizer.

This design in use in the Public Schools of Cleveland, Tenn.

Legislative Department

NEW AND PROPOSED LEGISLATION AFFECTING THE NAVY AND ARMY DENTAL CORPS.

By Homer C. Brown, D.D.S., Columbus, Ohio, Chairman Legislative Committee.

NAVY DENTAL CORPS.

Those interested in the progress of the dental profession, especially those desirous of more nearly harmonizing the status of our representatives in the Federal service to that of other staff corps, will undoubtedly accept the Dental Corps provision in the Navy Appropriation Bill as passed by Congress March 4th, and the provisions relating to the Army Dental Corps in H. R. 21054, introduced by Hon. Julius Kahn, of San Francisco, February 27th, as indicating some positive legislative progress.

The provision in the Navy Appropriation Bill is as follows:

"Hereafter all laws relating to the examination of officers of the Navy for promotion shall be construed to apply to the regular advancement of staff officers to higher ranks on the active list, the same as tho such advances in rank were promotions to higher grades:

Provided, That nothing in this paragraph shall be construed as in any way affecting the original appointments of officers to the Dental Corps as provided in the act approved August 29th, 1916, making appropriations for the naval service for the fiscal year ending June 30th, 1917, and for other purposes, and the time served by the dental surgeons as acting or acting assistant dental surgeons shall be reckoned in computing the increased service pay and service for promotion of such as are commissioned under said act."

This amendment was presented to a sub-committee of Naval Affairs Committee and recommended by them to the full committee who accepted it and reported same to the Senate. This excepts the members of the Navy Dental Corps, who were entitled to commissions without further examinations, under the act of August 29, 1916, from any change in that condition previous to their being commissioned. It further provides that previous service as acting or acting assistant dental surgeons shall be computed for service pay and for promotion. This is in harmony with the Comptroller of the Treasury's decision with reference to the service rendered by the members of the Army Dental Corps prior to being commissioned.

Had not this amendment been adopted to confirmation of the members of the Navy Dental Corps, having been held up for some time by the Senate, would

necessarily have subjected them to another examination. They also would have lost their service as acting or acting assistant dental surgeons, both for computing their service for pay and for promotion, as a decision to this effect had been rendered. This exemption from examination relates only to the rank of Lieutenant junior grades, as provided in the act of August 29, 1916, and does not exempt them from the required examination for promotion to the rank of Lieutenant or Lieutenant Commander.

ARMY DENTAL CORPS.

In line with a positive tendency for an efficient defense program a universal training bill has been carefully drafted by the General Staff of the Army, approved by the Secretary of War and was referred to both branches of Congress February 27th. I herewith quote from H. R. 21054, as follows:

Sec. 17. "THE MEDICAL DEPARTMENT. The Medical Department shall consist of one Surgeon General who shall be a permanent officer with the rank of major general during the active service of the present incumbent of that office and thereafter with the rank of brigadier general, who shall be chief of said department; a Medical Corps; a Medical Reserve Corps within the limit of time now fixed by law; a Dental Corps; a Veterinary Corps; contract surgeons as now authorized by law; the Nurse Corps as now prescribed by law; an enlisted personnel, and a temporary personnel.

The permanent commissioned personnel of the Medical Corps shall consist of forty-eight colonels, one hundred and six lieutenant colonels, six hundred and forty majors, one thousand and thirty-six captains, and one thousand, one hundred and two first lieutenants, all appointed as now prescribed by law.

The Permanent personnel of the Dental Corps shall consist of five hundred dental surgeons. Dental surgeons shall have the rank, pay and allowances of first lieutenants until they have completed five years' service. Dental surgeons of more than nine but less than nineteen years' service shall, subject to such examination as the President may prescribe, have the rank, pay and allowances of captains. Dental surgeons of more than nineteen years' service shall, subject to such examination as the President may prescribe, have the rank, pay, and allowances of majors."

* * * * * *

Section 29. "In computing length of commissioned service for promotion, constructive credit shall be given as follows: To chaplains and to officers of the Medical Corps and Dental Corps, four years. To officers heretofore appointed in the permanent staff corps and departments whose original appointment in such corps or departments was in the grade of captain, nine years; Provided, That such constructive service shall include any and all commissioned service prior to appointment to the grade of captain, except that nothing herein shall operate to deprive any officer of any credit for actual commissioned service in excess of nine years to which he would otherwise be entitled." * * * *

"Provided, That chaplains and dental surgeons shall not be promoted above the rank of major."

It will be noted that provision is made in this bill for a Medical Corps of 2933 officers and a Dental Corps of 500 officers. Therefore, it would seem that with possibly three exceptions this proposed legislation should meet with the hearty approval of the dental profession. The three exceptions are as follows:

First: As I understand it there is nothing in the bill which will recognize the contract or acting dental surgeon's service of members of the present corps. That is, the service rendered before they were commissioned.

Second: "Provided That chaplains and dental surgeon shall not be promoted above the grade of major." This only applies to these two corps.

Third: The National Dental Association has gone on record as favoring a head of the Dental Corps, with the rank of Colonel, to be connected with the Surgeon General's office. This was approved with a view of increasing the efficiency of the Corps and it would seem that the increased number of dental officers would emphasize the need for this. Therefore, whether the proposed bill

could be amended in this particular or not, it would seem that from a constructive service point of view this must sooner or later be recognized.

The provisions of this bill is positive evidence of the recognition by Military authorities for the need of an adequate and efficient dental corps, and further, there is at least some evidence that our legislative campaign, wherein we contended that our representatives in the service be accorded recognition in keeping with the importance of the service rendered and in harmony with the regulations of other staff corps, has had some effect as rank for three grades is provided.

In view of the present crisis which faces our country it would seem that some prompt action along general defense lines may be expected, since today the President has issued a call for Congress to meet April 2nd; therefore, some such legislation will probably be enacted without much delay.

I will promptly take up, with the officers of the National Dental Association and the members of the Legislative Committee, the question as to the advisability of attempting to have an amendment incorporated recognizing the non-commissioned service of members of the Army Dental Corps and eliminate the second exception as above stated. Also, if deemed advisable, we can look into the possibilities of providing for a head of the corps.

March 21, 1917,
609 Hartman Bldg., Columbus, Ohio.

THE JOURNAL of the NATIONAL DENTAL ASSOCIATION

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SUBSCRIPTION included in the annual membership dues.

SUBSCRIPTION PRICE, $2.00 a year, in advance, to non-members, living in all parts of the United States or its possessions. Canada, $2.40. Foreign countries, $2.75.

ADVERTISEMENTS accepted only from reliable firms. Fraudulent and misleading advertisements barred.

IN CHANGES OF ADDRESS both the old and new address must be given.

RENEWAL BILLS are sent one month in advance. Prompt attention to them prevents discontinuance from the mailing list. Journals are not sent beyond the subscription period.

VOL. 4 APRIL, 1917 NO. 4

Editorial Department.

NATIONAL DUES NOT TO BE INCREASED IN 1918.

With the reorganization of the National Dental Association, there came many new problems and grave responsibilities for its Officers and Board of Trustees, not the least of which is the management of the finances and the strictly business part of the Association. The financial problem was a comparatively simple one until it was decided to publish a monthly journal and assume the financial responsibility for the con-

duct of the Research Institute. The present high cost of paper, etc., has greatly increased the estimated cost of publishing The Journal, so that the Trustees must first place on a permanent financial basis, the National Association and The Journal, before assuming other financial obligations.

The expense of conducting the Research Institute to bring it to its highest efficiency has greatly increased. But one way has been considered in the past to meet these contingencies—namely, the raising of the dues of the National Association. This was done at Louisville with reference to The Journal, and an amendment presented to House of Delegates which was laid over for action this year, still further increasing the dues one dollar per member for the benefit of the Research Institute. For a considerable time, vigorous protests against increasing the dues for any purpose whatsoever, have been coming to the Officers, in many cases State Societies have contemplated withdrawing from the National, and in others, the fear was expressed, that such action would result in a large loss in membership, both of which would be most deplorable. After mature consideration, the President, Dr. Barber, deemed it wise to call a meeting of the Officers and Trustees of the National Association, and the Officers and Trustees of the Research Institute at Cleveland on March 10th, to devise ways and means to conserve the interests of both Associations. After a full, free and frank discussion of all matters, the following resolution was unanimously adopted:

> Resolved, that it be recommended to the various State Societies that their state dues be increased one dollar per member for the support of the Research Institute, which amount shall be paid directly to the Treasurer of the National Research Institute; that we further recommend, in those states where the dues have been raised for this purpose, that the Treasurer or Secretary of each state be requested to forward all research funds raised for this purpose directly to the Treasurer of the Research Institute.

In amplification of the above, Dr. Price offered the resolution which follows:

> That it be the sense of this body that the motion just passed be understood to be the sense of this body as the action that should prevail in the National Association meeting in the next annual session.

It will thus be seen that the situation has been clarified, and a complete and harmonious understanding reached.

Members of the National Association need not be told that increasing dues for any purpose is usually unpopular, and fraught with much danger, especially in the organization of a new association.

To make the National Dental Association a strong vigorous body, a large membership is most necessary; to make its work most efficient, a journal well and ably conducted, is absolutely essential and must be

maintained, not only as a vehicle to convey to the profession matters of interest, but also to publish the work of the Research Institute. These objects cannot be met without the active support of every local and state society. By careful management, the present dues of two dollars per member can be made to pay the expense of conducting the association and THE JOURNAL and should not at this time be raised. Many states have already expressed a desire, by an increase in their dues and otherwise, to contribute to the support of the Research Institute. This action or any others of a similar character that may be taken, meets with the cordial and hearty approval of the officers and Trustees of the National Dental Association and Research Institute, and it is hoped that there may be a ready and generous response to any appeals which may be made for individual or state society aid for the Research work. The knowledge on the part of the National Membership that in the future, propositions for an increase in dues for specific purposes will be discouraged, as unbusinesslike and not for the best interest of organized dentistry, should result in a large increase in membership in state and local societies, with the fear removed of a continuous asking for amendments to by-laws to provide more money. The matter of raising dues should be discouraged for a time at least, until the smaller and weaker state societies have had an opportunity to become strong in financial matters.

The profession is to be congratulated upon the adoption of the policy above mentioned because it insures an earnest, enthusiastic and harmonious working arrangement which will be of great benefit to the National Dental Association and affiliated bodies.

THE POLICIES OF THE RESEARCH INSTITUTE.

On March 10, 1917, there was held in Cleveland, Ohio, probably the most momentous meeting in the history of the Research Institute of the National Dental Association, since its inception. There was in attendance at this meeting, the Trustees of the National Dental Association, the Trustees of the Research Institute and the Research Commission members. These various boards met in conjunction in a special called meeting, which had for its object, the formation of definite policies, for the Research Institute, and a better co-operation of all bodies for its future success. This conference was characterized by the serious responsibility resting upon the officers of the various organizations represented. Some of these men had come a great distance and at considerable sacrifice of time and money in order that they might have a part in the deliberations of this very important meeting.

All present were agreed that the National Dental Association must first perfect the parent organization and establish on a firm financial basis The Journal of the National Dental Association. From resolutions passed and incorporated in the editorial on "NATIONAL DUES NOT TO BE INCREASED IN 1918," it was understood that no activities should be promulgated that would in any way jeopardize the future success of these two vital, fundamental basic principles, which underly the very foundation of organized dentistry; viz., THE NATIONAL DENTAL ASSOCIATION and THE JOURNAL OF THE NATIONAL DENTAL ASSOCIATION. When all the plans for the perfecting of these two gigantic undertakings are consummated, then the National Dental Association will be in a position to financially assist the Research Institute, as well as other activities. However, during this developmental period, the National Dental Association will assist the Research Institute in a propaganda, looking to the establishment of this scientific work on a more permanent financial basis.

No profession is going to advance and be recognized as a scientific profession, unless it is in a position to do real scientific work. Thus the permanent establishment of the Research Institute on an endowment plan, must be the next big undertaking of the dental profession. We must have this Institute permanently endowed, so that the dental profession may be able to carry on its own research work, under the leadership of men who have the necessary vision to know our scientific problems.

The responsibility for the securing of ample funds to continue our present researches, belongs to the dental profession. We must as individuals, and as component and state societies, go down into our own pockets and treasures to pay the bills. If the profession itself shows a willingness and a disposition to make the necessary financial sacrifice, as well as the business sagacity, to carry on such research work, it should only be a short time until our researches attract the attention of philanthropists. Every dentist is under an obligation to assume his moral and financial responsibility to his profession and to humanity in this worthy cause.

The Moses that is to lead the dental profession out of the unscientific wilderness and into the light of scientific truths, was born with the inception of the Research Institute. However, if this Moses is to lead us out of "Egypt" and over the "Red Sea" of difficulties into the land of true scientific attainment, it must be thoroly established on a scientific and permanent financial basis.

Every man that attended this conference went away from it, feeling that the plans and policies adopted would meet with the hearty co-opera-

tion and support of every member in our profession. With this co-operation, it was felt that a systematic campaign should be inaugurated, which would secure the enthusiastic financial support from every state society and individual member. We must measure up to that larger success, which will for all future time, place dentistry on an enviable professional basis. The Slogan should be **"FINANCIAL CO-OPERATION FROM EVERY SOCIETY AND INDIVIDUAL MEMBER."** Thus the proper financing of the Research Institute is one of the big undertakings now before the dental profession. The question is, Will the dental profession rob humanity?

Great self-sacrifices are now being made by some of our officials for the advancement of the cause of the dental profession; sacrifices that no tongue will ever be able to satisfactorily describe; sacrifices in money, time and obligations to wife and children, as well as great sacrifices in health. These sacrifices are being cheerfully made that the dental profession may in the future reap a scientific harvest of such great truths, as will be able to establish dentistry for all time to come, on a strictly and truly professional basis. With these great sacrifices being made, we would urge you as an individual member to discharge your financial obligation in contributing to the Research Institute an amount that will mean a real sacrifice to you. Your state society will be urged during the next few months and you as an individual will be asked to contribute to this worthy cause. We trust that when this proposition is presented to you that you will not "side step," but that you will make a financial offering that will be commensurate with what you think is your duty and responsibility to your profession and to humanity.

Many of the subscriptions that have been made to the Research Institute of the National Dental Association are now expiring. It will be necessary for us to renew these, and secure others from those who have not contributed to this Institute, if we expect to continue to carry on the present policies of the Research investigations. We must not, and the officers of the various organizations do not expect, to let the "Moses," that is to lead us out of unscientific developments into the establishment of scientific truths die in the "bulrushes." It must continue to grow and develop into a scientifically recognized institution. The work done by the Research Institute of the National Dental Association must be, and will be of such a scientific nature, that the reports emitting from it will carry weight with other recognized scientific researches in other professions.

The future policy of the Research Institute will be to affiliate and work in conjunction with various Universities, Hospitals and Dispensaries. This policy will open up a much larger field of activities, and

make it possible for us to secure the active co-operation of a larger number of scientific men, thruout the entire country.

To recapitulate, this conference decided on the following policies:

First—The National dues not to be increased for the Research Institute.

Second—State Societies recommended to increase their dues $1.00 for Research Institute—paying same direct to the Treasurer of the Research Institute.

Third—Urging private contributions for Research Institute.

Fourth—The Affiliation of the Research Institute with Universities, Hospitals and Dispensaries.

THE CHRISTMAS SEALS—DELINQUENT MEMBERS.

There are still a few members of the National Dental Association that have not sent in their checks for the Christmas Seals.

The Relief Fund Committee are anxious to settle up all accounts as soon as possible. The immediate settlement of these accounts by the delinquent members will save the Committee considerable money in the way of postage, labor, etc., in the mailing of statements.

The loyalty and co-operation of the members of our profession to this worthy cause is most commendable, and we trust that the few who are still delinquent, will not neglect to comply with the wishes of the Relief Fund Committee. Therefore, if you are delinquent, kindly send your check immediately, for which due credit will be given.

Items of Interest

THE WILLARD PYORRHEA TREATMENT.

Oren Oneal's New Brand of Quackery Is Barred From the United States Mails.

After defrauding the public of amounts estimated by federal investigators at $75,000 a year by means of a fake "cure" for pyorrhea, F. W. Willard, M. D., D. D. S., has been denied the use of the United States mails. Willard himself seems to have been merely a hireling, for the official report of the government declares that the owner of the business was Dr. Oren Oneal. Some of our readers will remember Samuel Hopkins Adams' characterization of Oneal in his "Great American Fraud" series. At that time Mr. Adams said:

"If I were organizing an American Institute of Quack Specialists I should select Dr. Oren Oneal of Chicago as the first president. The artful plausibility of his advertising, his ingenuity in 'jollying along' the patient for his reluctant dollars, the widespread familiarity of his features thru the magazine advertising pages, and, above all, his sleek and polished personality, make him the natural candidate."

And more to the same effect. Mr. Adams went further. He investigated Oneal's methods with some degree of thoroness and when he brought to the quack's attention concrete examples of the disreputable methods employed, Oneal insisted that all Mr. Adams had against him were "a few technicalities." To this Mr. Adams responded:

"Dr. Oneal is proceeding on a false premise. I have nothing against him; I found him a singularly agreeable and frank specimen of the genus Quack. But every man, woman and child who reads his advertisements has this against him and against the magazines that print his stuff; that he is a maker of lying promises, a deliberate swindler, and a tamperer with blindness at the peril of others, for a fifty-dollar fee."

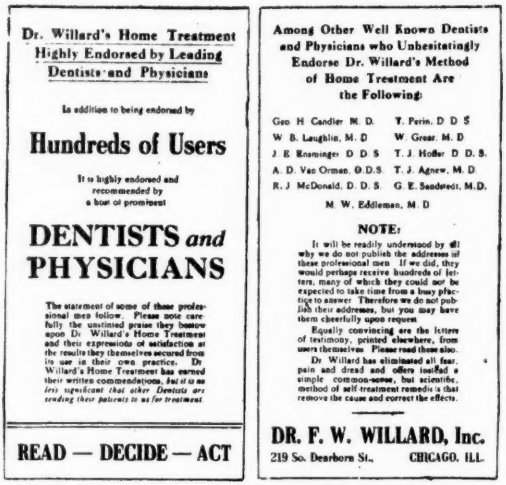
This was over ten years ago. Eye-quackery stock having apparenty taken a slump, Oneal has turned to tooth-quackery and the blatant advertisements of the Willard concern have for some time been an offense against decency and honesty.

The company seems to have been incorporated under the Illinois law in 1912. At that time its president was one M. L. Katz who, it seems, had been engaged in the advertising business in a small way. Willard was at first vice-president and secretary, while Oneal was the third member of the corporate body. In 1915, Oneal acquired Katz's interest and Willard became president with Oneal as

general manager. It was brought out in the government investigation that Willard received a salary for his services as "president and medical advisor" and claimed to have nothing to do with the business management of the fakery which he stated was under the sole direction of Oneal.

In July, 1916, Willard was called on by the government to show cause on or before Sept. 26, 1916, why a fraud order should not be issued against him and the company. On the date set Willard and Oneal presented themselves at the office of the solicitor of the Postoffice Department having as their legal representative one W. M. Ketcham of Chicago. Ketcham apparently operates a business having the somewhat imposing name "Federal Advisory Association." Ketcham was a postoffice inspector for a number of years but in 1910 went into business for himself. The apparent object of the "Federal Advisory Association" is to furnish information, to those willing to pay for it, on the question of how they may use the United States mails without technically violating the law. From other material in our files, it seems that the "Federal Advisory Association" also essays to offer suggestions on the wording of "patent medicine" labels and cartons.

Francis W. Willard was graduated by Marion Sims College of Medicine, St. Louis, in 1891. This fact, verified by the records, is admitted in one of the Willard booklets which states further: "After practicing medicine for some time he began the study of dentistry * * * and was graduated from the dental department of the Washington University." Curiously enough, however, another piece of advertising sent out by the Willard concern is a photographic reproduction of Willard's alleged diploma from the dental college. This diploma gives the date of his dental graduation as 1890—one year before he was graduated in medicine! According to our records, Willard was a dentist at Anna,



Dr. Willard's Home Treatment
Highly Endorsed by Leading Dentists and Physicians

In addition to being endorsed by

Hundreds of Users

It is highly endorsed and recommended by a host of prominent

DENTISTS *and* PHYSICIANS

The statement of some of these professional men follow. Please note carefully the unstinted praise they bestow upon Dr. Willard's Home Treatment and their expressions of satisfaction at the results they themselves secured from its use in their own practice. Dr. Willard's Home Treatment has earned their written commendations, *but it is no less significant that other Dentists are sending their patients to us for treatment.*

READ — DECIDE — ACT

Among Other Well Known Dentists and Physicians who Unhesitatingly Endorse Dr. Willard's Method of Home Treatment Are the Following:

Geo. H. Candler, M. D. — T. Perin, D. D. S.
W. B. Laughlin, M. D. — W. Greer, M. D.
J. E. Enzminger, D. D. S. — T. J. Hoffer, D. D. S.
A. D. Van Orman, D.D.S. — T. J. Agnew, M. D.
R. J. McDonald, D. D. S. — G. E. Sandvedt, M.D.
M. W. Eddleman, M. D.

NOTE:

It will be readily understood by all why we do not publish the addresses of these professional men. If we did, they would perhaps receive hundreds of letters, many of which they could not be expected to take time from a busy practice to answer. Therefore we do not publish their addresses, but you may have them cheerfully upon request.

Equally convincing are the letters of testimony, printed elsewhere, from users themselves. Please read them also.

Dr. Willard has eliminated all fear, pain and dread and offers instead a simple common-sense, but scientific, method of self-treatment remedies that remove the cause and correct the effects.

DR. F. W. WILLARD, Inc.
219 So. Dearborn St., CHICAGO, ILL.

One of the circulars sent out by Willard professed to contain testimonials from "leading dentists and physicians" together with the names of such physicians who had "unhesitatingly endorsed" Willard's treatment. Here are two pages of this circular reproduced in miniature.

Ill., for a number of years before coming to Chicago.

PYORRHEA CURED BY MAIL!

The business of the Willard concern was the sale on the mail-order plan of a so-called home treatment for pyorrhea or Rigg's disease. The "treatment" consisted of five remedies, three to be taken internally and two to be used in the mouth. The price asked was $5 for an amount sufficient to last thirty days if used in accordance with directions. Advertisements placed in such newspapers and magazines as were not above participating in the profits of this fraud were the mediums by which Willard Oneal got in touch with their victims. The advertisement urged the reader to send for the free illustrated book and full information regarding the alleged treatment. Those that sent for it received a small booklet with circular matter and an order blank. The following quotations from the booklet indicate the character of the claims made for the treatment:

THE HOUSEHOLD

Avoid Torture of the Dentist Chair

Wonderful New Treatment for Loose, Aching, Sensitive Teeth; Sore, Bleeding, Receding Gums and General Sore Mouth Conditions. Will Save You Useless Torture, Save Your Teeth and Save You Money. Results are Positively Wonderful. Read This:

SORE TEETH—DISEASED GUMS

Dreaded Pyorrhea or Rigg's Disease Has Been Conquered. Needed Torture, Loss of Teeth and Other Terrible Consequences Can Now Be Avoided Without Pain, at Home. You Don't Need a Dentist.

Pyorrhea Victims Among All Classes

Why Suffer Any Longer?

Dr. Willard's Book Sent FREE to All Sufferers

Read These Letters

My Book Tells All About It FREE

Neglect Is a Serious Mistake

Lay Aside Your Dread and Fear

Save the Teeth That Nature Gave You

DO IT NOW Don't Wait

Today Is Better Than Tomorrow. Fill Out the COUPON NOW

Dr. F. W. Willard, A 41 Pioneers Bldg., Chicago, Ill.

FREE—Write Now

Typical "scare stuff"! Reduced facsimile of a full page advertisement that appeared in one of the cheap monthly magazines.

"I have originated and perfected my two-fold treatment—a treatment which is both local and constitutional—which has had and is having such remarkable success. I may claim in all modesty that I probably have treated more cases of Pyorrhea than any other dentist in this country, and the fact that I have been

so universally successful proves that my treatment is correct. This is why you should pay close attention to one who knows the real and underlying cause of this trouble and who knows how and why it may be relieved by a simple, inexpensive home treatment."

Dr. Willard's treatment is a two-fold or combination treatment. Dr. Willard's treatment consists of remedies for relieving and counteracting the local conditions in the mouth. The first essential is absolute cleanliness, and this is secured by ingredients, carefully and scientifically compounded for this special purpose that kill the surface germs and render the mouth tissues antiseptically clean. It was necessary to spend a great deal of time in experimentation before it was possible to produce a remedy that was at the same time very powerful as a germicide and cleanser and non-irritating to the delicate mucous membrane of the mouth. In addition to these qualities it contains the wonderful remedy, Emetine, which is claimed by many noted authorities to be an absolute specific for Pyorrhea. There is no alcohol or any harmful substance in it."

"The next step after antiseptically cleansing the mouth and gums is to combat the diseased condition existing in the gums themselves. This is accomplished by means of a medicated cream —extremely penetrating— that is gently rubbed into the gums with the finger. * * * * Its effects are apparent almost at once and great relief may be confidently expected from the very start."

PLAYING ON FEAR.

In all his "literature" Willard emphasized and kept ever before the mind of the reader the fact that some dental operations are accompanied by pain while his mail-order treatment was painless. For instance:

"Painful Operations and Treatment may Be Avoided."

"With Dr. Willard's treatment there is absolutely no suffering of any kind."

"Loose and diseased teeth may be restored to their normal health and firmness without the least discomfort."

"The gums may be healed without the slightest pain."

The entire scheme is well set forth by Judge W. H. Lamar, solicitor for the Postoffice Department, in his memorandum to the postmaster-general recommending the issuance of a fraud order. We quote freely from the memorandum:

DOCTOR ONEAL
WEAK EYES
SORE EYES
BLIND EYES
CROSS EYES
CURED
The Oneal Dissolvent Treatment
is a combination of mild and harmless medicines that dissolve all unnatural growths in and on the eye, such as Cataracts, Scums and Films, and strengthen the sight. In cases of Weak, Watery or Sore Eyes, and Diseases of the Optic Nerve, its curative value is remarkable.
MRS. S. C. WILLARD, of Libertyville, Ill., was cured of Blindness caused by Cataracts on both eyes. IRA MERCHANT, Bloomington, Ill., says, "Dr. Oneal's treatment for Cataracts is wonderful."
Have cured thousands. No knife. No pain. No risk. Write to-day. New illustrated book, and professional opinion free. Describe your case carefully.
Dr. Oren Oneal
Suite 220, 52 Dearborn St., CHICAGO

Photographic reproduction reduced of an old-time advertisement of Oren Oneal in the heyday of his eye-quackery.

"The booklet contains a number of testimonials from persons who are alleged to have used Dr. Willard's home treatment with success. Nearly all of the testimonials relate to cases of pyorrhea which were in advanced stages, and a careful reading of the entire booklet unquestionably leads the reader to believe that the treatment in question will cure practically all stages of the

disease. In the booklet Dr. Willard gives the customer certain alleged symptoms of pyorrhea, and by the use of these symptoms and the symptom blank already referred to the patient 'diagnoses' his own case. Dr. Willard states:

SYMPTOMS OF PYORRHEA OR RIGGS DISEASE.

It may be that you who read this are already in the clutch of this awful disease of Pyorrhea, sometimes called Riggs Disease, and that you now know it. If you are in doubt read the following pages, whereon the symptoms are enumerated and make sure. To conclude that Pyorrhea is not present when it is, and to neglect immediate treatment on that account, would indeed be a grave mistake, and one which you might very well repent for the balance of your life. Therefore, make sure. Then act at once.

Read the following and determine how far the disease has advanced in your case:

"Testimony of the experts at the hearing clearly shows that it is impossible for a patient to diagnose his own case, for the reason that a diagnosis of pyorrhea requires considerable clinical experience, and further that it is impossible for a dentist to diagnose pyorrhea without examination of the patient. Even when a personal examination is made it is possible for a dentist who is a beginner to mistake other mouth lesions for pyorrhea or vice versa. It appears that gingivitis, caused by lack of care in the mouth, and certain catarrhal conditions will often simulate pyorrhea.

"Reading of the booklet gives the impression not only that Dr. Willard's home treatment will cure practically all cases of pyorrhea, even in advanced stages, eliminate all pain in connection therewith, and save the patient large sums of money which he would otherwise have paid to dentists, but instills in the minds of patients who are in fact not suffering from pyorrhea in any form, fear of the disease.

THE "TREATMENT."

The ingredients in the Willard treatment were analyzed by the Bureau of Chemistry, Department of Agriculture, and the government's report gives a detailed analysis of the preparations. The findings of the government chemists can be summarized as follows:

Dr. Willard's K-3 Tablets.—These were sugar coated tablets with a menthol flavor consisting essentially of the sulphocarbolates of zinc and calcium and a small quantity of the bismuth salt. Practically half of the tablet was made up of a mixture of starch, sugar and talc.

Dr. Willard's L-2 Tablets.—These were light tan in color and contained washing soda, baking soda, Glauber salts and resins with a trace of colchicin. Over 38 per cent. of the tablets was a mixture of starch and talc.

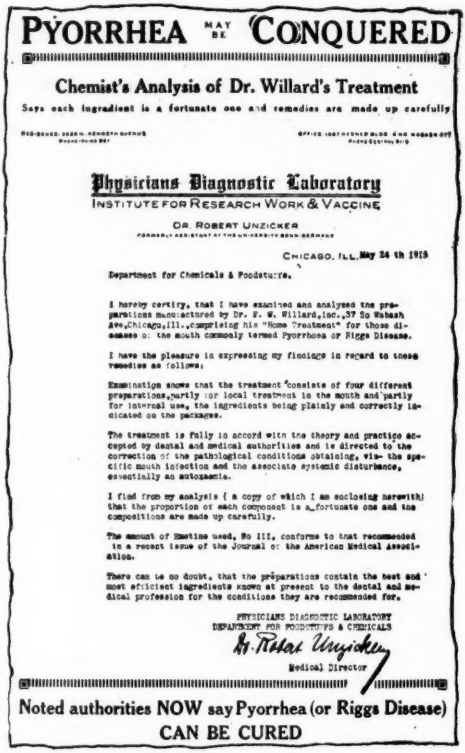
Laxative Liver Tonic Tablets.—These contained some laxative drug such as cascara, aloes or podophyllin. Over 70 per cent. of the tablet was made up of a mixture of chalk, gypsum, talc and sugar.

Dr. Willard's Dentol.—These were tablets that the purchaser was told to dissolve in water and use the solution as a mouth wash. Great stress was laid on the fact that the tablets contained emetin. The federal chemists found that over 96 per cent. of the tablets was made up of milk sugar and boric acid, while there were small quantities of menthol, thyrnol and eucalyptol. The total ipecac alkaloids (emetin) found by the chemists was only fifteen-hundredths of 1 per cent. The Willard concern claimed that paraform was also present in these tablets but it was not found.

Dentifirm.—This, Willard claimed, was "something absolutely new to the dental profession—a massage preparation for the gums of rare medicinal, as well as unusual cleansing qualities." The fed-

eral chemists found that it was a mixture of glycerin, starch, borax, chalk and soap flavored with oil of cloves and colored with a red dye!

Quoting from the solicitor's memorandum:



PYORRHEA MAY BE CONQUERED

Chemist's Analysis of Dr. Willard's Treatment

Says each ingredient is a fortunate one and remedies are made up carefully

Physicians Diagnostic Laboratory

INSTITUTE FOR RESEARCH WORK & VACCINE

DR. ROBERT UNZICKER

CHICAGO, ILL. May 24 th 1915

Department for Chemicals & Foodstuffs.

I hereby certify, that I have examined and analysed the preparations manufactured by Dr. F. W. Willard, Inc., 37 So Wabash Ave, Chicago, Ill., comprising his "Home Treatment" for those diseases of the mouth commonly termed Pyorrhoea or Riggs Disease.

I have the pleasure in expressing my findings in regard to these remedies as follows:

Examination shows that the treatment consists of four different preparations, partly for local treatment in the mouth and partly for internal use, the ingredients being plainly and correctly indicated on the packages.

The treatment is fully in accord with the theory and practice accepted by dental and medical authorities and is directed to the correction of the pathological conditions obtaining, viz- the specific mouth infection and the associate systemic disturbance, essentially an autosaemia.

I find from my analysis (a copy of which I am enclosing herewith) that the proportion of each component is a fortunate one and the compositions are made up carefully.

The amount of Emetine used, No III, conforms to that recommended in a recent issue of the Journal of the American Medical Association.

There can be no doubt, that the preparations contain the best and most efficient ingredients known at present to the dental and medical profession for the conditions they are recommended for.

PHYSICIANS DIAGNOSTIC LABORATORY
DEPARTMENT FOR FOODSTUFFS & CHEMICALS
Dr. Robert Unzicker
Medical Director

Noted authorities NOW say Pyorrhea (or Riggs Disease) CAN BE CURED

One of the traditions of mail-order quackery is that some sort of an analytical report should be published endorsing the "treatment" advertised. The Willard-Oneal concern held to the tradition. Here is a reproduction, greatly reduced, of a self-styled "analysis" of the Willard treatment issued by one "Dr. Robert Unzicker" who did business under the imposing title "Physicians Diagnostic Laboratory." So far as our records show, Unzicker is not a physician.

"* * * The treatment contains a small amount of emetin, one of the constituents of ipecac, which in recent years has been brought forward as efficacious in the treatment of pyorrhea. A difference of opinion exists among the profession as to the value of emetin applied subcutaneously by injection into the arm or by the use of a blunt needle forcing the solution into the pus pockets which are found about pyorrheal teeth. The Willard treatment does not contemplate the use of emetin in either of these ways. Instead, a small amount of emetin is put in the 'dentifirm' paste with which the patient massages his gums. The expert witnesses agree that even were emetin possessed of value its administration in such small doses as are contained in the Willard treatment and in the manner prescribed would have no effect."

The government called oral surgeons,

pathologists and dentists, all of whom agreed that Willard's home treatment administered by the patient himself at his home would be ineffective to cure or relieve pyorrhea. An interesting feature of the government's investigation which indicated pyorrhea in any form. In reply to all of his inquiries, the inspector received in every case the booklet "How to Save Your Teeth, A Home Treatment for Pyorrhea" which has already been quoted from. He also re-

Dr. Willard's PAINLESS Home Treatment Will SAVE YOUR TEETH and Cure the Disease

Why suffer from loose teeth or diseased gums when relief is so easy to be had?

Why endure the agony of dental operations when a cure can be effected painlessly?

Why deny yourself the comfort of good, sound, healthy, NATURAL teeth and gums when they can be secured to you so easily and at such small cost?

If You Suffer From Any of the Following Troubles it is an Indication That YOU NEED Dr. Willard's Home Treatment

If You Want to Enjoy Good Health Don't Neglect Your Teeth and Gums

Some Things You Ought To Know

Indigestion

Loss of Appetite

Stomach Troubles

Nervousness

Lack of Ambition, — From Tripoid, Pneumonia Catarrh and other Serious Diseases

Will Dr. Willard's Treatment Cure For You?

Read These Enthusiastic Endorsements

Why Do We Only Charge $5.00 For Dr. Willard's Treatment?

Address all Orders and Correspondence to

DR. F. W. WILLARD.

37 So. Wabash Ave., CHICAGO, ILL.

Photographic reproduction of one of the circulars sent out by Willard. The original, which was printed on two sides, was 1 foot wide and 1½ feet long.

was the documentary evidence collected by Inspector D. F. Angier, of the Chicago division, who, as readers of The Journal will remember, has done particularly valuable work in investigating other medical mail-order frauds. In the course of his investigations of the Willard concern Inspector Angier wrote to Willard, under various names, describing various mouth disorders, none of ceived the customary form letters and circular matter soliciting orders for the Willard treatment.

In one instance the inspector sent $1 for a "trial order" of the "treatment." The treatment was sent and thereafter Mr. Angier received a series of form letters urging him to purchase the full treatment which was offered at $4, instead of the usual $5. In the particular

instance in which this "trial treatment" had been sent, Willard had already acknowledge in a letter to Inspector Angier that the case described was not one of pyorrhea but a condition which the Willard treatment was not claimed to benefit. To quote further from the solicitor's memorandum:

"All of the letters received by the inspector in the course of the correspondence were signed 'E. F. Willard, M. D., D. D. S.,' and even the form letters have a decidedly personal tone calculated to lead the patient to believe that they were written by Dr. Willard. Dr. Willard on cross-examination stated that he had no knowledge of the letter in which a case was diagnosed as a mild case of pyorrhea and it appeared as a matter of fact that a rubber stamp signature was used. The rubber stamp was so excellent an imitation of Dr. Willard's signature that he himself on cross-examination was unable to state whether letters had been actually signed by him or stamped. There is no doubt that in all cases the patient thought he was receiving a personal letter from Dr. Willard, and further that it was the intention of both the owners of the concern and Dr. Willard to create the impression that the patient was receiving his personal attention and professional advice.

SUMMARY.

The whole scheme is well described toward the end of the solicitor's memorandum thus:

"In summary, it may be said that the respondents are selling thru the mails a worthless home treatment for pyorrhea to any one who will buy it, irrespective of whether or not he has pyorrhea, or, if he has pyorrhea, irrespective of whether or not it has reached that incurable stage which they admit exists; that in order to increase their business they are leading persons suffering from minor mouth disorders to believe themselves to be afflicted with pyorrhea, claiming it to be a 'loose term,' whereas in fact it has a definite medical significance; that the public has already been defrauded of several hundred thousand dollars thru the operations of the respondents; and finally that if prompt steps are not taken to prevent further use of the mails by the respondents the public will not only be further defrauded, but those suffering from pyorrhea will be discouraged from securing proper treatment which might save the teeth if taken in time."

From the memorandum it seems that Willard and Oneal made a strenuous effort to continue taking in the $75,000 annually and submitted to the postoffice department a new set of advertising urging that they had completely modified the claims previously made. They stipulated that if permitted to continue in business they would not advertise their treatment as for pyorrhea or Riggs'-disease nor use the mails to solicit money for the sale of a pyorrhea treatment. The solicitor of the Postoffice Department called attention to the fact that under the stipulations suggested, the Willard treatment could still be advertised and sold thru the mails provided no mention was made of pyorrhea or Riggs' disease. As Willard-Oneal had claimed thruout the hearing that the "Willard Treatment" was specially designed for the relief of pyorrhea, the suggested stipulation was a virtual admission that its sale for such a purpose was fraudulent. The solicitor pointed out that it was difficult to understand why it should be deemed valuable for any other purpose than the one for which it was claimed to be specially prepared. The memorandum closed with the following recommendation:

"After a careful consideration of all of the circumstances of this case I am convinced that it is one in which the protection of the public demands the issuance of a fraud order. * * * I find that

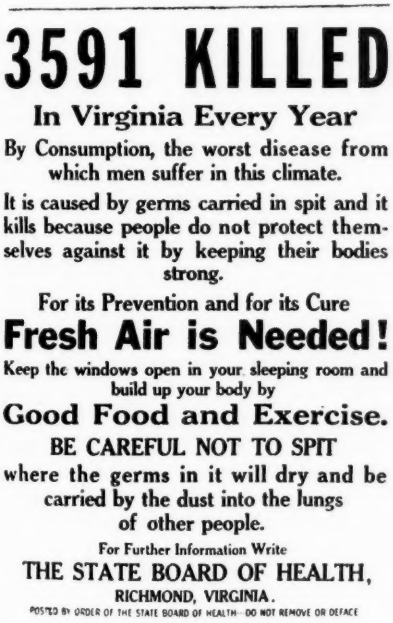
this is a scheme for obtaining money thru the mails by means of false and fraudulent pretenses, representations and promises, and therefore recommend that a fraud order be issued against the names appearing in the caption of this memorandum."

The fraud order was issued, Dec. 23, 1916.—Journal of The American Medical Association.

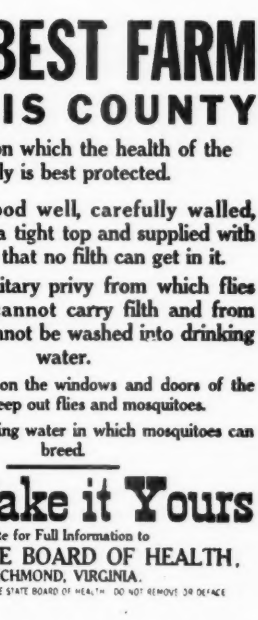
PREACHING HEALTH ON THE HIGHWAYS.

By Ennion G. Williams, M. D., State Health Commissioner of Virginia.

The same knowledge of human nature that prompted pioneer advertisers to utilize the street cars long ago led the makers of farm implements and the venders of patent medicines to tack their signs along the roadsides. They knew that men would drive or ride by in a state of mental idleness and would be certain to read any attractive signs that might be posted conspicuously by the road.


3591 KILLED
In Virginia Every Year
By Consumption, the worst disease from which men suffer in this climate.
It is caused by germs carried in spit and it kills because people do not protect themselves against it by keeping their bodies strong.
For its Prevention and for its Cure
Fresh Air is Needed!
Keep the windows open in your sleeping room and build up your body by
Good Food and Exercise.
BE CAREFUL NOT TO SPIT
where the germs in it will dry and be carried by the dust into the lungs of other people.
For Further Information Write
THE STATE BOARD OF HEALTH,
RICHMOND, VIRGINIA.
POSTED BY ORDER OF THE STATE BOARD OF HEALTH—DO NOT REMOVE OR DEFACE

Our Virginia Board of Health learned its lesson some years ago from these advertisers and from time to time, has been placarding the roads and the stores. Our first venture in this line was a pasteboard small-pox warning, sent thru the mails to the postmasters in rural Virginia, with the requests that it be posted conspicuously on the store-porches. This was followed by a like warning on ty-


THE BEST FARM
IN THIS COUNTY
Is the one on which the health of the family is best protected.
IT HAS a good well, carefully walled, covered with a tight top and supplied with a pump so that no filth can get in it.
IT HAS a sanitary privy from which flies and animals cannot carry filth and from which filth cannot be washed into drinking water.
IT HAS screens on the windows and doors of the house to keep out flies and mosquitoes.
IT HAS no standing water in which mosquitoes can breed.
To Make it Yours
Write for Full Information to
THE STATE BOARD OF HEALTH,
RICHMOND, VIRGINIA.
POSTED BY ORDER OF THE STATE BOARD OF HEALTH—DO NOT REMOVE OR DEFACE

phoid fever. In 1912, when the model vital statistics law went into effect, we decided to use the cross roads as well as the stores, and accordingly printed many thousand posters on muslin. These were distributed to the local registrars, and they were generally tacked up where thousands of Virginians saw them.

PLEASE POST

SMALLPOX

Now Prevails in This County

IF YOU DON'T WANT TO HAVE IT,
If you want to escape the Danger, Suffering, Inconvenience and Expense of the Disease

Be Vaccinated
YOU AND YOUR FAMILY

If you are properly vaccinated you cannot have the disease.

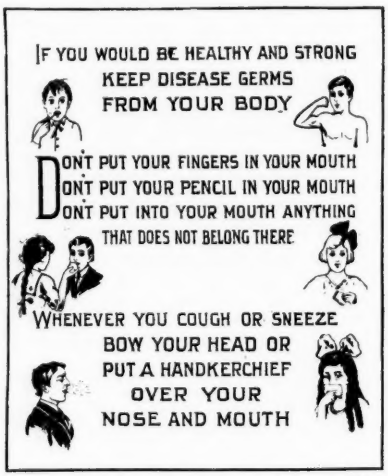
There is no other sure way to avoid it.

Vaccination properly done is not dangerous

Virginia State Board of Health

Early last spring we had occasion to do some intensive community work against malaria and, to aid our field men, we issued a pasteboard malaria placard similar in general design to those we had used as warnings against typhoid fever and small pox. These were placed along all the roads our men traveled. As one of our investigators had occasion to pass along a road so placarded a few weeks afterward, he found that many of the placards had been torn down and effaced by boys. Much valuable work was thus undone.

It then occurred to us that if tin could be substituted for pasteboard, more permanent results could be attained. Accordingly, the publicity agent of the board designed a series of six posters, covering the rudiments or farm sanitation and tuberculosis. Each of these was so lettered that the saliant facts


IF YOU WOULD BE HEALTHY AND STRONG
KEEP DISEASE GERMS
FROM YOUR BODY
DONT PUT YOUR FINGERS IN YOUR MOUTH
DONT PUT YOUR PENCIL IN YOUR MOUTH
DONT PUT INTO YOUR MOUTH ANYTHING
THAT DOES NOT BELONG THERE
WHENEVER YOU COUGH OR SNEEZE
BOW YOUR HEAD OR
PUT A HANDKERCHIEF
OVER YOUR
NOSE AND MOUTH

To the Teacher: Please post this card in a conspicuous place in your school-room where the pupils will see and read it. Please explain to the children why these rules are necessary; tell them how communicable disease is spread by germs that come from the bodies of others and how it can be prevented if we keep germs away from our mouths and noses.

If you can get your pupils to practice these simple rules you will find a sharp decrease in the amount of sickness and in the consequent loss of time from school. A very good way of enforcing these rules is to have a heading "Personal Hygiene" on your daily record and to mark children for putting their fingers or pencils in their mouths, for careless sneezing and coughing, etc.

Very respectfully,

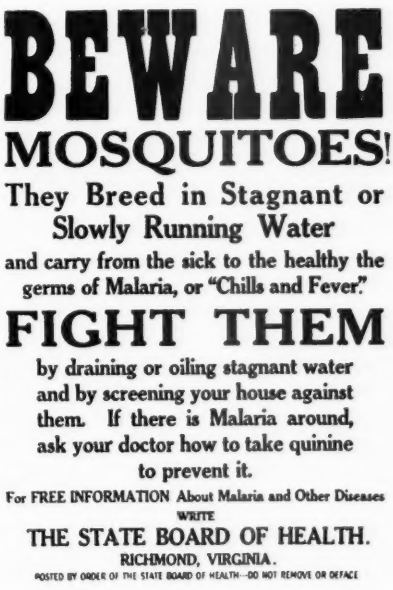
ENNION G. WILLIAMS,
State Health Commissioner.

would stand out in large type, easily legible at thirty or forty feet. We had these lithographed and reproduced in black on thin sheet iron painted a lively orange color. Each placard is 9¾ by 13¾. The initial cost of the lithographed plates was $45 for the set of six and the cost per thousand thereafter was $22. As we have already used approximately 12,000 of these and still have the plates in excellent condition, the cost per placard has thus been only a little more than 2.6 cents. The work was well done at these figures by the Richmond branch of the American Can Company.

As the placards are heavy, their distribution was something of a problem in itself. But we met this by having our hotel inspector, who travels in an automobile, placard the roads along which he passed and we shipped fresh supplies to him from place to place along his route so that he would not overload his car. A little later in the summer, we found two reliable medical students, who agreed to placard a large number of the main highways of the state for their traveling expenses and motor transportation. By giving them the use of a small touring car of popular make, we found the cost of distributing the signs very low. Thru their efforts and those of the regular inspectors, together with the help of a few health officers in isolated districts, we have placarded most of the main roads of the Commonwealth and every one of the hundred county seats.

The results have been gratifying. Thanks to the material and workmanship, the placards have remained unharmed in the vast majority of cases and have attracted much attention. One correspondent of the board went so far as to state in an unsolicited letter that he attributed the low morbidity from malaria in his district to the attention paid the warning of the placards by the people; and a legislator has offered to introduce a bill making it a misdemeanor for any person to tear down or deface one of the placards. Returning automobilists have often told us of seeing and reading the messages on the placards.

Taken as a whole, the experience of our board justifies us in calling this venture to the attention of other health authorities as another useful means to that constant publicity upon which the sanitary education of the people depends. To health authorities who wish to prepare such placards* as those we have been using, we shall be glad to send sample sets and to supply any information that may be possible.—American Journal of Public Health (The Journal of the American Public Health Association).


BEWARE
MOSQUITOES!
They Breed in Stagnant or Slowly Running Water
and carry from the sick to the healthy the germs of Malaria, or "Chills and Fever."
FIGHT THEM
by draining or oiling stagnant water and by screening your house against them. If there is Malaria around, ask your doctor how to take quinine to prevent it.
For FREE INFORMATION About Malaria and Other Diseases
WRITE
THE STATE BOARD OF HEALTH.
RICHMOND, VIRGINIA.
POSTED BY ORDER OF THE STATE BOARD OF HEALTH—DO NOT REMOVE OR DEFACE

*Pasteboard placards for posting in schools cost $61.92 for 15,000.

NUXATED IRON FOR THAT TIRED FEELING.

Is there to be a renaissance of the testimonial epoch? Ten or fifteen years ago the testimonial industry was at its height, especially as it is applied to medicinal products. Every "patent medicine," however quackish, was able to publish testimonials from persons whose position, if not their intelligence, should have made them hesitate to give such endorsements. Those were the days when "Peruna" published panegyrics from such notables as Admiral Schley,

Rear-Admiral Hichborn, Julia Marlow, etc., when the praises of "Duffy's Malt Whiskey" were declaimed by Sarah Bernhardt, the virtues of "Fahrney's Blood Vitalizer" sung by Schumann-Heink, and the attributes of "Electric Bitters" immortalized by Champ Clark. Those were the happy days of the "patent medicine" vendor. Neither should it be forgotten that the writing of testimonials for the so-called "ethical proprietaries" had become an ingrown habit with the medical profession. Then the light was turned on. Lay magazines exposed the fraud and viciousness of the "patent medicine" business, while The Journal demonstrated by numerous examples that a large proportion of the proprietary medicines sold for physicians' prescriptions were little, if any, better than the "patent medicines." Gradually, testimonial writing became unpopular, at least among the intelligent portion of the population. Physicians virtually abandoned the practice, while among laymen it gradually became confined to the ignorant and credulous. Recently there have been indications that the habit is being re-established. Hence, the question with which this comment begins. Our readers will remember that Mr. Jess Willard credits "Nuxated Iron" for his victory over Mr. Jack Johnson, while Mr. Ty Cobb declares, in very black type, that this panacea is responsible for his "winning" qualities. Now comes the Hon. William E. Mason, former United States Senator, now congressman-elect from Illinois, advising the people of the United States that "Nuxated Iron Should Be Made Known to Every Nervous, Rundown, Anemic Men, Woman and Child." This is the same Mr. Mason whose name appeared as "General Counsel" of the "International Institute for the Treatment of Tuberculosis" operated by the "rupture-dope-dyspepsia-consumption-curer," O. E. Miller. When The Journal called Mr. Mason's attention to the questionable company in which his name appeared he pleaded ignorance of the nature of the "Institute" and withdrew from it. Doubtless when his attention is called to the "Nuxated Iron" quackery, he will ask those who are responsible for the quarter-page advertisement now appearing in the newspapers to return his photograph and testimonial. Congressman Mason testifies that he had suffered greatly from "that horrible tired feeling." After reading the testimonial, those holding old-fashioned ideas of the dignity and intelligence that should characterize the House of Representatives will appreciate just what a "tired feeling" means.—Editorial in The Journal of the American Medical Association.

MARKED PREVALENCE OF SYPHILITIC LESIONS.

Address Delivered by Dr. C. K. Clarke Before the Oral Hygiene Convention of the Ontario Dental Society.

Important research work has been recently undertaken at the Toronto General Hospital out-patient department in establishing most serious facts regarding the frequency and pernicious results of syphilis.

Dr. C. K. Clarke, Superintendent of the Hospital and Dean of the Medical Faculty, in addressing a meeting of the Oral Hygiene Convention of the Ontario Dental Society, referred to the dentist as the most important man in the community, hospital experience showing conclusively the importance of the teeth and necessity for the closest relationship between dentistry and medicine. Co-operation be-

tween dentist and physician was declared to be of particular necessity in syphilitic cases because of the frequency of secondary infection in the mouth, in the form of mucous patches. Spirochetes, when taken from the mouth, are of the most virulent type. The dentist should be most careful regarding sterilization, infection being frequently innocently acquired.

Special observation of syphilitic cases at the hospital originated in the feeble-minded clinic, where a very high percentage of patients were found with syphilitic taint. This led to the establishment of a specific clinic, which is operated both day and night, thus being available to the working classes. Conditions discovered were a shock to the authorities. From seventy to eighty patients presented themselves each day for treatment. Some of these, of course, were "repeats" and all received mercurial treatment. These conditions led the hospital authorities to go farther and gather data from all sources. A Wasserman test was made of every patient who presented at the hospital, and the alarming fact was established that over 12 per cent. of patients had syphilis in one form or another. These facts have been absolutely proven. Over 25 per cent. of patients in the asylum for the insane, Toronto, were admitted because of this cause, resulting in paranoia.

These facts, said Dr. Clarke, unpleasant as they are, must be faced. Why not approach the subject systematically and scientifically, as in tuberculosis? Social service nurses can undoubtedly be of great help, but the law should go farther and enact legislation providing for registration, such as now previals in Australia. Under such a system all patients are registered and are known by number so long as treatments and instructions are followed, but when a patient fails to follow up the prescribed treatment, the name of the individual is divulged as being a menace to the health of the community.

Dr. Clark stated that application is to be made to the Canadian Conservation Commission and the inauguration of registration urged. Dentists were asked to note all cases in practice and refer same to proper authorities.

Since the war it has been impossible to procure salvarsan, which is largely used in treatment of these cases, but fortunately two young Canadian chemists have discovered and produced a Canadian product that is in every way satisfactory as a substitute for salvarsan.—Oral Health.

IS RADIOGRAPHY A TRADE OR A PROFESSION?

Altho radiography was discovered over twenty years ago and has been used in dentistry for several years, it did not gain popularity as a diagnostic agent until the relation between alveolar abscesses and systemic disorders were so widely heralded. Not until the relations between infected teeth and constitutional diseases were proved did the dental profession take advantage of the aid which the radiograph offered to them.

With the adoption of the radiograph by the dental profession as a diagnostic agent, we find many things have occurred which are not exactly as they should be. With the medical profession claiming that devitalized teeth are sources of systemic infection, we find that a number of dentists have accepted that verdict without a question of a doubt and have based their diagnosis entirely upon the radiograph. This diagnosis is often based on the reading of the radiograph by one not properly versed in the interpretation of radiographs. Very often the diagnosis is made without any clinical

knowledge of the case. A radiograph is valuable only as it becomes an aid in conjunction with other means of diagnosis. We have known of teeth being diagnosed by the radiograph as "dead teeth" when every other known means of diagnosis showed them to be "alive." This was not the fault of the radiograph, but was the fault of someone trying to read into the radiograph what they could not see, and the disregard for other clinical symptoms. As a result of this, dental radiography is in a rather peculiar position. Some members of the dental profession have turned against it, believing that it has no diagnostic value, others have acknowledged their inability to read a film, while still others are confident that they can properly read any film after having seen one or two radiographs. This is an unfortunate circumstance, but, no doubt, the men who say they cannot interpret a film know more about radiography than those who can read and diagnose any case from any kind of a picture. Those who acknowledge their inability to diagnose every condition from the radiograph are the least dangerous to the public—they realize that radiography is a profession and a specialty of dentistry and can only be properly learned by a long course of professional training, and that radiography is not a "photographic side line" that can be of value to a profession if practiced as such.

The impression seems to have got abroad that the only requisites necessary to become a dental radiographer are sufficient capital to purchase an outfit and the courage to fool with something one knows little about, or the dangers thereof, and the disposition to enter a profession of which one knows little. Unfortunately, there is no law governing the practice of dental radiography in most states. In a few states it might be possible to so construe the law to govern that branch of dentistry, but it would also be possible in most states to construe the law to permit the practice of dental radiography by men who possess no dental or medical training. We find this has actually happened in some states. As a result of the acceptance of the value of the radiograph by the dental profession, many laymen have been attracted by the commercial possibilities of radiography, with the result that men who have no knowledge of dentistry whatsoever have established offices for the taking of dental radiographs. Commercial photographers, electricians and window trimmers have developed over night into dental radiographers, some of them not even knowing how many teeth there are in the oral cavity, besides the many other things a dental radiographer should know. Men totally unqualified as dentists or physicians have opened offices in different sections of the country and are making thousands of radiographs daily, a great many of which are beautiful pictures from a photographic standpoint, but most of which are of little value to the patient as an aid in diagnosis, for the radiographer does not know anything about the clinical history of the case and the dentist for whom the radiograph was made has not had enough experience to properly read the film. The dentist does not know the conditions under which the radiograph was taken, the position of the tube, the time of exposure or the technic of developing the plate.

We have mentioned the fact that many men are becoming dental radiographers without any dental or medical training. This is unfortunate; but it is more unfortunate that the dentists should so little respect their profession that they would be willing to turn their patients to a man to assist them in diagnosing their case, who is not a professional man. If a physician desires to have assistance in the diagnosis of a case, he calls in a man who is a physician, or has had some training along medical lines. If a dentist desires aid in diagnosing a condition, he should respect his profession enough to enlist the aid of a professional man.

Still we find dentists who are daily consulting with men who have no dental knowledge and seeking their advice in the diagnosis and treatment of pathological conditions. It takes several years of study to become a dentist, one must possess certain requirements to satisfy the law, but, to become a dental radiographer, one needs only to advertise to the dental profession that he will take radiographs for so much "per," and a large number of the profession are willing to receive him with open arms and consult with a man who knows nothing of anatomy, or pathology, and who has become a dental radiographer because he believes the commercial possibilities are greater than being an electrician, photographer, or window trimmer. These men who have entered dental radiography have no knowledge of professional ethics and use all sorts of means to advertise themselves before the public. Recently, we saw a number of lantern slides, shown by a professional man, that had been made by a commercial (we will not call him a dental radiographer, for we have too much respect for the profession) radiographer, who had placed his name in the slide in such a position that it was the most prominent part of the picture. He recognized the value of advertising, but has chosen a means that we cannot sanction—all because his education was neglected along the proper lines. As the conditions are at present, the dental profession has lowered itself by being willing to allow a class of men, who have no professional knowledge whatever, to diagnose their cases.

Again, dental radiography is only in its infancy and must be advanced along scientific lines to be of any professional value. Men who are only interested in radiography for what they can get out of it will not advance it scientifically.

Also, a patient consults a dentist because the patient knows the dentist must have certain qualifications. The patient wants the services of one educated in the dental profession. Still, the dentist will often betray the confidence of the patient by referring him to a commercial radiographer who knows nothing about pathology, and who has no prefessional education. It is not fair to the patient. Also, commercial radiographers, knowing nothing about pathology and infectious diseases, are not able to protect the patient as they should. We have even known commercial radiographers to work a half day and not even wash their hands. In taking films intraorally, it is always necessary to at least approach the mouth even if you do not place your fingers in the mouth. If they allow the patients to place the films themselves, occasionally the result will be satisfactory. The possibility of infecting one patient from another by men who have no knowledge of sanitary and antiseptic methods becomes apparent and is no idle dream.

We have already mentioned the fact that many faulty diagnosis have been made by commercial radiographers, and if this continues, the public will lose faith in radiography, as some are doing already, and dentistry will have to suffer therefrom. The dental profession should be more careful in referring patients to men who have no professional training, than they have been in the past.

Some have suggested that there should be laws made to regulate the practice of radiography. This is not necessary because patients are referred to radiographers and the commercial radiographer will exist only when the dental profession supports him. If dentists are willing to consult with men who are inferior to them in professional training, the commercial radiographer will be forced back into the trade from which he came and dentistry will have eliminated one objectionable factor that promises to become as dangerous as the dental parlors.

Dental radiography is a profession and not a trade and should be practiced by professional men.—Editorial in The International Journal of Orthodontia.

MANAGEMENT OF PULPLESS TEETH.

There is no doubt but this is the live topic at the present time, in the practice of dentistry, because it is so closely related to apical infections, which are known to be the cause of many grave systemic disturbances. It is always wise not to be the first to attack the enthusiast, who thinks he has discovered a panacea for our misfortunes. Because it is by the enthusiast that progress is made. Progress in the practice of dentistry goes by waves. The live topic may be general anesthesia for a time and then local anesthesia, then gold inlays, then orthodontia, and now root canal treatment. Exodontia will be sure to have its place on the boards before very long.

Those who have been practicing for any length of time, well remember the dentist who arose at the conventions and said: "The dental pulp had completed its function when the tooth erupted, and therefore he had no hesitation in devitalizing any pulp and removing it and filling the root canal to the end." There wasn't the slightest doubt in his mind but he could do what he said. Those who knew more about dental anatomy always sat back and smiled to themselves. Those were the days when many of us knew little dental anatomy, and never used the X-Ray as an aid in root canal treatment. Many of such convention orators believed what they said to be true, because they attempted the devitalization of only single rooted teeth. They said they reamed out the canal to the end with an engine reamer, and used gutta percha as a filling material.

Since those days there has been a very great improvement in the instruments and methods used in the management of root canals. With these improved instruments and improved methods of practice we find men again becoming too enthusiastic. There are operators today whose skill is said to be such that they can open to the end and properly treat and fill the root canals of fully 90 per cent. of second and third molars. This is just simply an extravagant statement, as has been shown by the work of Dr. Orton, of Minneapolis. After a more or less careful study of the work of many of the enthusiasts, one is led to believe that the operation of removing pulps and filling root canals is altogether a mechanical one. In fact, judging from what one reads about this matter, all that is necessary is to get thru the end of the root no matter by what means, and fill the root canal with gutta percha even tho a large quantity goes thru the end.

It is strange that in all this enthusiasm connected with the mechanical procedure of opening up root canals and filling them, that so little attention has been given to the physical properties of the filling materials and the physiological and pathological state of the tooth itself and its surrounding tissues. There seems to be no careful study of the effect of the mechanical treatment or the chemical treatment of these tissues in the process of opening up and filling root canals.

It has been found that altho root canals have been opened to the end and mechanical filled, or as some of these men say, hermetically sealed with gutta percha, still rarified areas and infection occur occasionally. The explanation for these unfortunate results, after very exact mechanical procedures, is, that arsenic has likely been used as a means of devitalization. In fact, among a certain class of dental teachers who do a good deal of convention work, this is given as perhaps the sole cause of rarified areas occurring after the mechanical procedure has been perfect. It doesn't seem to have entered their mind that cocaine, suphuric acid, hydrochloric acid, potassium sodium, bicarbonate of soda, alcohol, chloroform, eucalyptus, or gutta percha itself, might have anything to do

with the result. Not to mention broaches, reamers, and even stray infection.

Over fifteen years ago we had an occasion to call the attention of the profession to the desirability of avoiding any irritation of the tissues beyond the end of the root canal by either drugs or instrumentation, during the operation of removing the pulp or filling the root canal. In fact, we made the statement then that it might be better to leave a small portion of the pulp at the apex, than go thru the end with irritating drugs, broaches or root canal fillings. This teaching has been verified in the work of Carl G. Grove, Minneapolis, which states that there are fewer rarified areas around the apices of the roots of teeth not filled to the end than those which are filled to the end by the methods above described. We can see no reason for saying that drug or even mechanical irritation around the end of the root, may be the sole cause of re-infection, because it has not yet been shown that gutta percha will hermetically seal the end of a root. While on the other hand, it has been shown by many experiments that gutta percha will not act as a barrier to bacteria.

Tubuli around the end of a root which once become saturated with infection are very rarely sufficiently sterilized to destroy all the organisms in them, and are certainly never so sealed with gutta percha that organisms may not grow again. If any poison, whether it be a drug or the result of infection, destroys the peri-cemental membrane, recovery of the membrane will not take place. The best that can he hoped for is to more or less completely close the apex of the root and the canal. In the great majority of cases the apical opening of the canal at the time of filling is more or less moist, and therefore cannot be completely sealed with chlora-percha or gutta percha. This question of hermetically sealing root canals and cavities in teeth with gutta percha and cement is all relative, but not exact.

A very voluminous writer on this subject, when asked why he used gutta percha as a root filling, said that it had been found that no infection occurred about the apices of roots of teeth when this material was properly used. There does not seem to be any basis for this statement in the face of Grove's work. An X-Ray is not always a true guide to the accuracy of a root canal filling.

There are so many vagaries about the X-Ray photograph, that the inexperienced may be easily deceived. It is quite possible for an X-Ray to show a canal well filled, when, as a matter of fact, there may be a whole wall or root not filled at all. If it were possible to make exposures in at least three or four positions, there would then be some chance of putting dependence in X-Rays. An X-Ray can be made to show bone at the apex of a root, or show no bone at all, just by a change in the power of the rays.

To sum up, there are many root canals which cannot be successfully opened to the apex. (Note we do not say beyond. If there is dead and necrotic tissue beyond the apex, it may be necessary to go thru). In the operation of opening of root canals, no drug or instrument should be used which will destroy or irritate vital tissues beyond, which are needed for the stability of the tooth. It must be borne in mind that an excess of cocaine forced thru the apex of a root will destroy the peridental membrane just as surely as an excess of arsenic or sulphuric acid. There is no root canal filling now in common use which will hermetically seal a canal for any length of time. Gutta percha is perhaps the best all-round root canal filling in general use, but it has its limitations. Thus a root canal, no matter how well filled with gutta percha, is not proof against infection. It, however, leaves less room in the canal for re-infection, and at the same time has fewer other objectionable qualities than any other material now in use. It must be borne in mind that mi-

cro-organisms do not grow in tissues where there is any resistance, unless there are many of them present. Thus the more compact the root filling, the less chance of organic growth.

Let there be more energy spent on developing a technic which will not irritate the tissues beyond the apex in cases of devitalization and upon means of preventing infection beyond the apex at the time of operating and afterwards. The technic of going thru the apex is only needed in cases of infection or necrotic tissue beyond the apex. It has no place in cases of devitalization.

If there is much necrotic tissue beyond the apex, even an opening thru the end does not give sufficient drainage to insure a cure. The only hope is to establish efficient drainage.—Dominion Dental Journal.

THE EFFECT OF MALFORMATION AND INFECTION OF THE ORAL CAVITY OF THE CHILD, UPON ITS FUTURE HEALTH.

By Stephen Palmer, D. D. S., Poughkeepsie, N. Y.

Today is the beginning of a new era in medicine and dentistry when for the first time a member of the specialty of medicine which the speaker represents is by invitation presenting the part dentistry plays in the great field of medicine, and the place it is gaining in the great art of healing, and prophylaxis, and in behalf of the Dental Society of the State of New York and the National Dental Association I thank you for the privilege and honor of appearing here today, not on my personal account, but rather for the profession which I love and ever hope to uplift by my efforts.

The dental profession has realized and been preaching for years the importance of a mouth in perfect condition.

We know from observation in our daily vocation, the value of a clean and well-kept mouth and teeth. We know that there is nothing that so reduces the vitality of a boy or girl as decayed and aching teeth. We have noted the effect upon the future life, of the neglect of the mouth conditions of a child. We know that the pupils in our schools cannot do their best unless that portion of their systems, at least, is in a healthy condition. We know that with the mouth and teeth in perfect condition and kept so, many of the bodily ailments and weaknesses can be eliminated, and thus the general health of the children in our schools, and finally the health of the nation will be improved. We know that as the mouth is the gateway of the body; that as the teeth are placed there to perform the first function of the great system of digestion and assimilation, that with them in a perfect, cleanly and healthy condition only can the child be in perfect health, and the future man or woman strong, healthy and intelligent.

The teeth are the organs of mastication; without teeth in perfect condition we cannot have proper mastication, without proper mastication we cannot have proper digestion, without proper digestion we cannot have proper assimilation, without proper assimilation, we cannot have health.

The Creator provided each little mouth with twenty teeth, why? Because they were necessary, to prepare the food for nourishment of the child body. Let the teeth and mouth of the child between the age of two and fifteen years be neglected until the teeth are removed to relieve suffering, or left decayed and broken down to the gum so they are of no use,

and often abscesses and providing a continual exudation of pus, as well as lodgment for many germs of many of the diseases of the body, during the years when the child is growing and needs every function in perfect order, the child cannot masticate properly the food provided, is suffering, is swallowing food unprepared for digestion, and is swallowing bacteria to be assimilated thru the system, and you are laying the foundation for a future ill health that will be carried by them to the grave.

Dr. Victor Vaughan, ex-president of your National Association, says:

"The mouth is the most important port of entry for infection.

"One or more decayed teeth with constant infection, so impairs the vitality of the child that physical and intellectual development is impossible.

"Deformity of the jaw and malposition of the teeth interfere with the proper development and function of the brains.

Dr. Osler says: "There is nothing so important to the health of the nation as the hygiene of the mouth," and added to that I make the assertion, That there is nothing so important to the health of the coming men and women, as the hygiene of the mouth of the boys and girls of today.

Dr. Williams, Superintendent of Bowne Memorial Hospital for Tubercular Patients, says, "Seventy-five per cent of the children with tuberculosis have very bad teeth and oral infection, when the infections are cleaned up and the teeth restored, the chances for recovery increases, and the return of health is much more rapid."

Dr. Kneph says, "I defy the most skilled physician to either cure or help a tubercular patient which has decayed teeth in the mouth."

We as members of the professions cannot ignore these facts as stated by our leading confrére, the sooner we realize the truth of them, and with all our knowledge and effort in diagnosis and treatment, the more satisfactory will be our results, and prophylaxis in medicine by the aid of prophylaxis in dentistry, will produce the results unprecedented in their improvement of the health and strength of our fellow citizens.

Deformities.—Malformations or deformities of the mouth unless to the extreme are often not noticeable except only to those who have made a study of them, as no two normal human dentures have ever been created exactly alike, in fact it has never been demonstrated that Nature ever duplicated her forms; just so there have never been two cases of malformation exactly alike. Deformity of the teeth which reduces their function, impairs speech, and mars the facial lines are so prevalent that it is now almost a rule rather than an exception. Go where we may, wherever humanity congregates and we are confronted by those deformities in such numbers that we are amazed.

The reason for the great number of deformities is attributed to the mixture of blood of different races, as we note that in the Grecian and Roman ages when the blood was purely Grecian or Roman deformities were practically unknown.

Dr. Wuerpel says: "The tendency of modern civilization seems to be to create a law for each individual and in the face of complex and constantly changing conditions a fixed type as a basis or standard to govern the molding of the human face cannot be established, yet discouraging even as this seems, we believe there is a law for determining the best balance of the features or at least the best balance of the mouth with the rest of the features, which artists probably knew nothing of. It is a law so plain and so simple that all can understand, and apply it: that the best balance, the best harmony, the best proportions of the mouth in its relations to the other features require that there shall be the full complement of teeth, and that each tooth shall be made to occupy its normal position."

"It must be remembered by us all that it takes several years for the completion of the building, of a human denture. We must remember that all parts of the anatomy are liable to abnormalities in development, as your medical literature bears abundant witness, but that no part is more frequently at variance with the normal in its development than the dental apparatus, is evidenced by the fact that malocclusion of the teeth in some form is almost the rule rather than the exception.

We can better understand the reason of this when we remember that the dental apparatus is not an organ with but a single function, like the eye, or the ear, but that it is a very complex structure, with many functions, into which enter not only the jaw, dental arch, and teeth but the muscles of mastication, the lips, tongue, nasal passages, palate, and throat, and that in addition to the function of mastication these are also concerned in the vital function of respiration, and also in speaking, singing, whistling, laughing, crying—in short, in the expression of all the various emotions, the different parts and combinations of parts entering into the performance of these various functions and acts are so intimately associated that even slight inharmony in the growth and development of any one may ultimately involve the whole apparatus, interfering with the normal functions of all, and even producing repulsive deformities, for the influence of these parts on each other is always continuous and progressive toward the maintenance of harmony and normal if normal, and toward increase of inharmony and the abnormal if abnormal" (Angle).

There are various causes for facial and mouth deformities, but time will only allow us to enumerate those that come under the attention of the general medical practitioner, the general surgeon, the rhinologists, and the laryngologist.

The sole object in establishing dental dispensaries, and the oral hygiene movement in our public schools, is to teach our future men and women the value of the teeth, or in fact the value of a tooth.

Every tooth of both temporary and permanent dentures have a function to perform, namely, assisting in keeping the full denture in perfect occlusion, as the loss of one deciduous tooth before the allotted time for the permanent one to take its place results in the eruption of the permanent tooth in malocclusion, and the loss of one permanent tooth results in a permanent deformity, which impairs the functions of the whole dental apparatus for all future time, therefore one cause of dental deformity is the loss of one tooth. The one way to guard the future welfare of our patients is to insist upon the care of every tooth both temporary and permanent that it may be retained.

Thumb, lip and tongue sucking habits so often formed by children cause many deformities, but if the habit can be broken before the permanent teeth erupt will reduce the number of cases of malocclusion.

The most serious and constant cause of malocclusion is nasal obstructions, namely, adenoid vegetation. Adenoids being a trouble of childhood, and most active during the growth and development of the denture, namely, before the age of fourteen years, it is very important that the rhinologists and the orthodontist should work together, as it is just as useless for the rhinologists to treat the nasal passages without the assistance of the orthodontist, as for the orthodontist to attempt to correct the deformities caused by nasal obstruction without the removal first of the cause by the rhinologist.

Every dental surgeon who makes a study of mouth deformities, has noted the effect of mouth breathing upon the future health of the individual, causing as it does the contraction or narrowing of the dental arch, the elevating of the hard palate which causes the obstruction of the nasal passages, the obstruction of

the tongue, and finally the impairing of speech, and the function of mastication, and the marring of the symmetry of the face.

May we as members of the great professions of the healing art take in consideration finally that the deformities of the mouth from whatever cause, retard the functions of the lips, tongue, cheeks, the nasal passages, the hearing, and the speech, which altho lessened at the age of fourteen or fifteen, by atrophy (in case of adenoids) the evil effects may last thru life, and uniting our efforts assist in reducing this very serious cause of many future ailments of mankind.

Infection.—It has taken Doctors Mayo and Hunter to bring to the attention of the medical profession, what the dental surgeon has known and been advancing for years, that mouth infection or oral sepsis play an important part in the health or ill health of the individual. Someone has said, "A child's health is only as good as its teeth."

My only ambition at this time is to impress upon my hearers, that as thru the mouth passes every substance which enters into the development and strength of the body, health is dependent upon its condition.

During the last few years the origin of many infectious diseases has been traced to conditions of the mouth and teeth. As in medicine so in dentistry the radiograph has become an important agent in diagnosis and by its assistance we have been able to uncover many of our shortcomings and by its assistance we are solving many problems and correcting many errors of the past.

An unclean mouth is one of the causes of many bodily weaknesses and the value of oral prophylaxis has been proven in many cities by the establishment of dental dispensaries, results of which have been that the child is healthier, and many nervous diseases and much retardation is eliminated, and thus the intellectual condition much improved, and the propaganda is to be continued until there will be established in every city and town a dental dispensary.

I have treated exhaustively the subject of mal-occlusion, as I believe therein lies the origin of many future mouth infections; to malocclusion is attributed the origin of pyorrhea alveolaris; as teeth not in a position that is normal and thus not in use, or if in use are by irregularly receiving under pressure from an unintended direction are always pyorrhetic, and as pyorrhea is not a disease of childhood (or not so prevalent) we believe the prophylactic precaution, namely early recognition and correction of malocclusion, will reduce the now increasing, practically incurable disease. Also irregularity of teeth make the cleansing of them more difficult, therefore providing lodgment for food and eventually caries.

"A clean tooth never decays," is our slogan, and to that might be added, teeth in correct position or occlusion are easy to clean, and therefore never decay.

Again the mouth conditions of the child affect the future. By the neglect of the temporary teeth often until proper mastication is impossible, and the carious teeth provide lodging places for filth and bacteria, which is mixed with the food and swallowed, and also many teeth in that neglected condition become abscessed and the exudation of pus is also carried into the system with the food.

If we as fellow practitioners of the different branches of medicine would unite our efforts, by early oral prophylaxis many of the problems which are baffling the medical world would be eliminated.

We have the value of strength demonstrated in the German Army of today where they have had compulsory dentistry in many cities, a child not allowed to enter school unless the teeth were in order. We have the neglect of teeth demonstrated in the English Army (the nation of the whole world that has neglected the teeth and mouth), where many,

many men are obliged to return home because of mouth conditions.

In September a law in our state goes into effect, which legalizes dental hygienists, a step toward the ideal we believe, as these trained young ladies may go into our schools and assist in educating as well as applying oral prophylaxis.

By our united efforts I prophesy a healthier, stronger and brighter coming generation.—New York State Journal of Medicine.

CURRENT VIEWS REGARDING THE TONSILS AND THEIR SURGICAL REMOVAL.

Nowadays when any organ of the body attains a previously unsuspected importance so that considerable professional attention is concentrated on it, the circumstances is soon reflected in the interest and expectations of the layman. This is seen, for example, in the popular attitude towards the tonsils and adenoids. Few untutored persons have any conception as to the purpose, not to say the location and anatomic relations, of these lymphoid tissues. The physician may counsel the removal of one of the structures with a clear understanding that he is urging what is, in a sense, an experimental operation which may remove a possible cause of disease in other organs. The layman, encouraged by the apparent innocuousness of the operative procedure, soon begins to look on tonsillectomy as a sort of panacea for the most diverse ills; and somehow this state of mind occasionally seems to weigh in the balance with the professional man himself. That the uses of these lymphoid structures are so little understood is no reason for counting every prominent tonsils or adenoid in persons of school age as a defect. Indeed, there seems to be a wholesome reaction against the operations on tonsils in youth merely because they are prominent and noticeable. At the John Hopkins Hospital, for example, the practice is to regard the tonsils and adenoids in children as physiologically important parts of the mechanism which protects the lower air passages from dust and organisms. If there are no mouth-breathing, no evidence of damage to the ears, no chronic enlargement of the glands of the neck, no cystic condition of the adenoids known as Thornwald's disease, and none of the so-called "reflex neuroses," the removal of adenoids regardless of their size or appearance is not recommended.

On the other hand, recent years have witnessed a growing interest in management of diseased tonsils and a widespread appreciation that the germ of tonsillitis may hit in many spots far removed from the local seat of obvious disorder. Tonsilar and nasopharyngeal infections have of late frequently become related, for example, to infections and rheumatoid arthritis, myositis and acute rheumatic fever to chorea, to hyperplasia of the cervical glands, and even to nephritis. If these relationships and other indications of the involvement of the tonsils as portals of entry for harmful micro-organisms could be convincingly established, the indications for the removal of the tonsils both as a prophylactic and as a therapeutic measure would become clearer and more rational. It is of unusual value, therefore, to have available a carefully digested study of the relation of tonsilar and nasopharyneal infections to general systemic disorders, based on 1,000 cases in which operation was performed at the Johns Hopkins Hospital during the

past five years. An added importance is lent by the fact that these operations were not done in a haphazard way in hurried dispensary service without experienced anesthetists or assistants; they were performed under the rigorous routine of a surgical ward, and the cases were followed up in order to learn the subsequent history with respect to disorders supposed to be secondary to a chronic focus of infection in the upper air passages.

As a result of the experience now collated, Dr. Crowe and his associates have reached certain tentative conclusions which may be helpful in the contemplation of tonsillectomy. They assert that the operation should never be undertaken during the acute stage of tonsilar inflammation, as a cerebral abscess may result. Diabetes is as much a contraindication for tonsillectomy as it may be for any operation necessitating general anesthesia. Tonsillectomy is rarely of benefit in the chronic deforming types of arthritis, in many cases probably doing more harm than good. The Baltimore surgeons are further convinced that nothing is to be gained from a tonsillectomy during the acute stage of chorea, acute rheumatic fever or endocarditis. Their experience shows that even after the nose and throat have been put in normal condition by operative measures these diseases may occur. In any event the tonsils are not the only portals of entry for the etiologic organism, and their removal in an interval free from symptoms can be justified only on the plea of preventing further cardiac lesions which may result from subsequent acute tonsillitis. The frequency of heart and joint defects in chorea may justify such a prophylactic measure.

In infectious arthritis in which the periarticular changes predominate, and perhaps also in myalgia, the promise of helpfulness from tonsillectomy is greater. In the early stages of glomerulonephritis it may also be worthy of some consideration. The tonsils are the most common site of the chronic infections which give rise to a hyperplasia of the deep cervical lymph glands near the angle of the jaw. The enlargement of the glands will rarely subside after treatment of carious teeth and alveolar abscesses alone. It seems advisable, therefore, under such conditions to consider the removal of the tonsils in cases of persistent palpable glands at the angle of the jaw, particularly if the patient has some general systemic disorder. The majority of enlargements are apparently due to a chronic pyogenic infection which will subside after tonsillectomy. The others are due, as a rule, to persistent tubercle bacilli.

Obviously the advisability of a tonsillectomy in any individual case depends on the malady and the general condition of the patient. As the Baltimore investigators express it, tonsillectomy alone will not cure tuberculous cervical adenitis, arthritis or glomerular nephritis. It is necessary in such cases to apply general hygienic measures as well, so as to increase the patient's resistance. If the tonsils are the primary focus of infection, their removal in suitable instances may materially alter the prognosis by preventing a constant reinfection. Skilful surgery is indispensable. A partial occlusion of the crypts, resulting from an incomplete tonsillectomy, as sometimes happens, may actually aggravate the symptoms of infection by producing a mechanically made focus of trouble. Despite the many uncertainties and unsolved problems which still exist, however, Crowe and his collaborators state that their records "tend to support the evidence of Billings and others in regard to the importance of focal infections in many of the general disorders seen by the internist, the pediatrician, and the general surgeon."—Editorial in The Journal of the A. M. A.

BETTER PUBLIC HEALTH ADMINISTRATION FOR SMALL COMMUNITIES.

It is quite generally conceded that the public health is more carefully safeguarded in metropolitan districts than in small cities, villages and rural communities. As a result we frequently find a higher incidence of contagious diseases, and especially of typhoid fever, in the small villages and on the farm than in the congested districts of large cities. It has been shown also that the health of school children in cities as a rule is better than that of the children in rural districts. In most rural districts and small cities and villages little or no provision is made for public health work, whereas in most large cities fairly adequate annual appropriations are made for this purpose. Many dwellers in small cities and villages are beginning to realize the failures in this direction. The chief difficulty heretofore has been to find a way to finance an efficient health department for such communities. It is evident that a city of from 2,000 to 3,000 inhabitants hardly would see its way clear to hire a full-time health officer, a school nurse, and a dairy and milk inspector. A small community could hardly make use of all the time of a health officer and school nurse, and hence there would seem to be needless extravagance. This difficulty has recently been overcome by two successful experiments in co-operation of neighboring small cities (at Wellesley Framingham, Needham and Melrose, Mass., and LaSalle, Peru and Oglesby, Ill.,) whereby it is made possible jointly to support a full-time health officer and assistants and to make proper use of their whole time.

The second annual report of the Hygienic Institute, the Department of Health for LaSalle, Peru and Oglesby, Ill., which has just appeared, shows what can be done by co-operative effort. Prior to the establishment of the co-operative health department, these three cities had no more in the way of machinery for proper health administration than most other cities ranging in population from 5,000 to 12,000 inhabitants. Each had a part-time health officer, two of whom received $25 per month and one $35. With such meager salaries not much service could be expected, and no attention was paid to milk and dairy inspection, medical inspection of school children, epidemiologic investigation or collection of vital statistics. Epidemics of small pox, diphtheria and scarlet fever were of frequent occurrence, and in many instances the patients were not isolated, but could be seen walking the streets if not too ill to be confined to their beds. Diphtheria patients were practically always released as soon as the membrane disappeared, often in less than one week from the time of onset, and scarlet fever patients were quarantined only from two to three weeks, according to the severity of the case. With the advent of the co-operative health department, these conditions were readily changed. Diphtheria patients are now quarantined until two negative cultures from the throat and nose are obtained on two consecutive days, and scarlet fever patients are quarantined for a minimum of five weeks. A milk inspection ordinance was passed and dairies and milk supplies are being systematically inspected and scored. Nearly all of the milk is now delivered in steam sterilized bottles and over half of it is pasteurized, whereas prior to the establishment of the co-operative health department most of the milk was dipped from cans on wagons and was not pasteurized. All dairy cows have been tuberculin-tested, and all reactors have been disposed of from those herds whose yield is not pasteurized. All grocery stores, meat markets and restaurants are being inspected

and scored, and a vigorous campaign has been instituted against the insanitary outdoor privy. A medical school inspector and two school nurses have been employed, and close watch is kept over the school children lest any may come to school while suffering from a contagious malady. Physical examinations are made of all school children both in the parochial and the public schools once every two years, and all defects found are recorded on a proper card. All serious defects which might be a handicap to the child are reported to the parents with the suggestion that the child be taken to the family physician or dentist for proper treatment. All cases are followed up by the school nurses, and in many instances in which the parents are unable to provide proper treatment, free treatment has been obtained thru charity. A free dental clinic has been established at which all school children whose parents cannot afford to pay for the services of a dentist receive dental care free of charge. An infant welfare nurse devotes all of her time to the care of infants and of mothers and prospective mothers, and one nurse devotes half of her time to anti-tuberculosis work.

The results of these measures are just beginning to be noticeable. During the first year there were forty-seven deaths form diphtheria and scarlet fever, whereas during the second year there were only sixteen deaths from these two diseases. During the first nine months of the third year, up to Feb. 1, 1917, there have been but nine deaths from diphtheria and scarlet fever. The total death rate for the entire district was 15 per thousand during the year ending April 30, 1915, and 13.9 per thousand during the year ending April 30, 1916.

The total expense of the department, which serves approximately 30,000 people, has been $16,350 a year—certainly a profitable investment.—Editorial Journal of the A. M. A.

A CONFIDENTAL WORD TO THE CONSCIENTIOUS X-RAY MAN.

We need you in our work, and we are very grateful for your services. You have done much good, and are capable of doing much more good. You have also done great harm, and are capable of doing still greater harm. Let us get together and study how this harm may be avoided. In the first place you are assuming altogether too much, and are making many unwarranted statements. The simple fact is that you do not know many of the things you claim to know. You glibly write "puspockets," "abscess," "infection," "gross infection," opposite certain teeth when there is positively nothing of the kind associated with those teeth, and what is worse you hand this false information to the patient, thus frightening him into the removal of useful teeth which can never be successfully replaced. You are too often men with a single purpose—the purpose of finding something. Sometimes you are a dentist earnestly seeking for the truth. Sometimes you are a dentist who has studied dental histology and dental pathology; and who is alert to the problems presented in maintaining the mouth and teeth in a condition of health and usefulness. Sometimes you are a physician who has been well trained in general medicine and in diagnosis but who knows almost nothing about dental histology or pathology, and has not the slightest conception of the significance of saving or losing a tooth. Sometimes you are neither a dentist nor physician and are utterly devoid of knowledge regarding pathological processes. You could not diagnose a moun-

tain torrent from a cataract of the eye, and yet you sagely make a diagnosis of mouth conditions and write it down for the patient to read. In this you may be doing the dental practitioner a grievous wrong—in fact you have done it in many instances. What is infinitely worse you may be doing, the patient irreparable injury—you have done it. You have needlessly frightened many a patient into the extraction of teeth that should never have been removed—leaving the patient in a worse condition than before.

Let us reason together and see if we cannot be mutually helpful one to the other, and serve the people better than we are doing. We—the men who do not make X-ray pictures—need your aid in many ways, and we cheerfully accord to you the ability to produce a better picture than we could possibly do. But we want you to remember this one thing and abide by it;—you have absolutely no right to diagnose any case and pass your opinion upon it without consultation with the dentist who has had the case in charge. No X-ray evidence should ever be taken except in conjunction with the clinical history of the case. Not that we ask you to merely take a picture and remain passive in the matter. We welcome your opinion stated to us frankly, whether that opinion is right or wrong. You may be able to detect evidence in a picture that we would overlook, and we thank you for calling our attention to it. But we ask you to cease from this time making a diagnosis to the patient, and writing those mystic and formidible legends on X-ray pictures "pus-pockets," "infection," etc., etc., and handing it to the patient. Why? Not because we want to have the truth hidden, but because we do not want people misled—and in the past people have been woefully misled. You have written "abscess" when there was no abscess. You have diagnosed "pus-pockets" over the apical end of a root which on investigation contained a perfectly healthy living pulp, and you have condemned teeth on X-ray evidence which were entirely harmless and altogether useful. The simple fact is that you cannot tell what is meant by a shadow around the root of a tooth in an X-ray picture, and until you know more about this you have no right to condemn a patient to the agony of apprehension and the terror of uncertainty produced by reading such highly colored terms.

If you will co-operate with us conscientiously and conservatively in clearing up the many problems which confront us in our work, and in which you can be of such splendid service, we shall take the greatest pleasure in working with you and supporting your efforts; but if you continue in the way some of you are traveling it will not be long before not only the profession but the public will be heaping on your head a righteous malediction and crying in your ears the unhappy word "Anathema."—The Dental Review.

DENTAL FEES.

Much has been said and written in the past about fees for dental service. There are men practicing dentistry who believe in charging for their services at so much per hour; others believe in charging a fixed fee for calls, irrespective of service rendered; others believe in making a price when work is started and adhering to this, regardless of complications unlooked for when the case is started but that may arise during the course of the treatments; and there are still others who believe that prices should be charged in accordance with service rendered and the ability of the patients to pay; these also maintain that the value of services rendered cannot be ascertained until after the work has been completed.

With the first group we do not agree.

Professional men should not estimate the value of their time at so much per hour. When they do this they class themselves with the mechanics and should be satisfied with mechanic's wages. Few dentists care to do this. The advocates of this plan talk much, but think little, and their vision is quite restricted. Their reasoning is illogical and will not bear cold and careful scrutiny.

With the second class we beg to disagree. Such a course is unfair to the patient and to the dentist. It gives the patient an opportunity to impose upon the dentist and certainly gives the dentist an opportunity to slough his work and impose upon the patient. These temptations should be removed as much as possible for the good of both parties.

With the third class we cannot agree because hard and fast rules can never be applied in professional work. You cannot look at a bird and tell how high it can fly. Neither can the dentist look at the condition of teeth that need dental service and tell the complications that may arise in the treatment of them. Nature is most uncertain in her treatment of man. A seemingly simple condition may develop into one most grave and dangerous. Work that you thought might be completed in ten hours may take twenty; one must then either slough his work, be unfair to the patient and himself, or put in the time necessary to do the work well and be imposed upon.

With the fourth and last class we heartily agree. It is true that practicing dentists in the country must do much work out of which they get small returns but this they must be prepared to do, and must do it for sweet charity's sake. In the cities this is not so necessary because the clinics at dental colleges and infirmaries take care of the poor. Those who are capable of paying for service rendered must be charged accordingly, not overlooking their ability to pay. Dentistry well done should be well paid for. To fill or crown a tooth well is worth about as much as to do a simple curetment, remove a clean appendix or repair a lacerated perineum; but in the one case $8.00, $10.00, or possibly $15.00 is charged; in the other, $50.00, $75.00, to $500.00. Take the nose and throat specialist; submucous resection, $50.00, $75.00, or $100.00; adenoids, equally as much; tonsils, as much or more. Surely a dentist to do his work well must have as delicate and refined a technic as the nose and throat operator but he gets much less for his work tho his services to the patient may mean equally as much or more than that of the surgeon.

In rendering professional service there is but one guide. Do the best you can. Your ability to serve may be limited but those who possess two talents are not to be expected to do as much as those who possess ten. But condemnation rests forever upon those who possess ten talents and render a service equal to the ability of those who possess only two. The capable conscientious dentist knows what his services are worth and he knows the ability of his patients to pay. Conscience is a correct guide and he who follows it makes few mistakes. When you trust your purse to an honest man you do not need to count the pennies when you put it in his keeping and then again when it is returned. A patient in the hands of an honest dentist will be justly treated and rendered a just and honorable bill.

Propagandists who spend their time in helping the dentist to get more fees would be better employed if their efforts were directed toward helping the dentist do a better class of work, and thus merit greater fees. In the long run service plus attains its reward. The honest, capable dentist need not worry about financial returns. His chief concern should be more ability—more light. In the aggregate his fees will balance the service rendered when he does his best and strives to attain the true professional man's noblest aims.—The International Journal of Orthodontia.

MICHIGAN.

The National Research Commission.—Someone has truthfully said, "What I give away I have. What I do for others for nothing I am paid for. What I keep, I have not and what I am fully paid for, I lose."

Advance in science is paid for in sacrifice. Nothing, having any value, can be obtained for nothing. If an article is worth something, it costs something and it was fully paid for. Its value is dependent upon its cost. The same is true in the word of science. Some one pays for every advance made. Some one has made the required sacrifice for the benefit of the human race. The history of the whole world is merely a history of sacrifice. The Romans paid the price for their liberty in blood. Rome conquered ancient Gaul but they bought back their liberty by paying the price. We bought our own liberty from England by paying the price. The price was the blood of those who died by fighting for our liberty. Lincoln again paid the price that the Union might be saved. The price was the blood of those who died at Brandywine, in the Battle of the Wilderness, at Gettysburg and other mighty struggles during the dark days of the Civil War.

The advances dentistry has made since the days of the Egyptians have been made by paying the price. The price has been the untiring, unrelenting, everlasting determination of a few to give to dentistry a better means of overcoming some of the ills their fellow men have to contend with. Dentistry owes something to these men for paying the price. Their lives have been successful, because they paid this price. We have taken what they bought and are today using what they paid for. It is ours to use, but more than that; it is ours to develop and advance. We, too, must pay the price that dentistry will be handed to the next generation farther advanced than when we received it. The extent to which we advance the science of dentistry will measure the degree to which our lives have been successful.

Success in life is not measured in money. It is not measured by what we have but by what we have done. If we leave the world better than when we found it, our lives have been successful; if we do not, it would have been better had we never lived at all. The same is true in dentistry. If we leave the dental profession better than when we found it, very well; if we do not, better would it have been that we were never dentists. It is not necessary for all to do research work, but we can all support it.

In the past, dentistry has been developed by individual effort, but that day has passed. Individual effort is too great a waste. We have today, or are trying to have, combined effort. This effort is expressed in the National Research Commission. On this Commission depends, to a great extent, the advance the science of

dentistry is to develop during our time. On its development depends the development the next generation is to make. This is dependent, not upon the individual, but our combined effort. It's the price we are expected to pay. It is our unrelenting, everlasting duty.

Humanity asks us to pay this price. The medical profession is wondering if we will pay the price. "The next great advance in preventive medicine must come from the dentists," Dr. Mayo has said, "The question is, will they do it?" The answer is the Research Commission. A great many state societies have included in their dues a sum for the Research Commission. These men have paid the price. The question that confronts us is, will Michigan do it? Our opportunity comes this April. Will we pay the price? The price is so small and the opportunity so great. Will Michigan pay the price next April?—Editorial in the Michigan Dental Journal.

The State Society.—The Michigan Dental Journal says: "Would you like to invest a little time and money in a proposition that will pay you 500 per cent interest?

No, it is not impossible.

Be at the Tuller Hotel, Detroit, at 9 o'clock sharp, Thursday, April 12th, prepared to attend every session of the State meeting and get in on the ground floor of the new and better dentistry.

Five hundred per cent is really a ridiculously small estimate of the mental, moral and financial returns the investment will bring you. Don't miss it.

Look out for the March issue of the Michigan Dental Journal. It will be occupied, chiefly with the details of the biggest and best post-graduate State Society meeting ever held within the confines of the State of Michigan.

Sounds like boasting, doesn't it? The past year has been crowded with big events for dentistry. The cream of these have been skimmed off and boiled down by masters and will be presented in a way to surprise and instruct the big progressive men of the profession; even the little man who knows it all may learn something.

If you progressive men have not yet marked off the dates of the meeting, April 12, 13, 14, take your appointment books and do it now, and don't, for goodness sake, put up the old, old whine, "I didn't get sufficient notice." DO IT NOW!

"Nothing sharpens a man's wits like poverty, hence many of the greatest men have been poor boys."

"Every man I ever knew had ambition but only a few had application with it."

ILLINOIS.

A Typical Case.—C. N. Johnson says that usually the editor of The Dental Review disposes of communications such as the following in other than an editorial way; in short, he writes personal letters, and lets it go at that. But this case is so typical and so disheartening that it has seemed worth while to try, if possible, to aid not only the writer of the letter, but some of our readers as well. The letter is from one of our esteemed readers in Alabama, and is as follows:

January 31, 1917.

Dr. C. N. Johnson, Chicago, Ill.

Dear Doctor: Occasionally I have a patient with an excessive flow of very ropy saliva and the teeth just decay faster than I can fill them, almost. Probably I will dismiss them with all the cavities I can find filled, and in from three to five months they will return with other large cavities and probably a pulp involved. Caries at the gingival margin is usually very prevalent in these mouths.

Such cases as I have described are very discouraging to me as well as to the victim, and I should like to know if you can offer me any means of relief.

Can't you write something for The Dental Review that will help those of us who don't know how to combat such cases? I am sure that many of its readers feel just as helpless in these cases

as I do, and would welcome an article by you that offers relief. Probably something has already been written that I ought to have seen and that would have helped me out of this trouble but I have failed to see it.

Thanking you in advance for any help you can give me I am,

Most sincerely yours,

F. A. J.

The good doctor in this letter recites a class of cases that thinking men in the profession have worried over ever since they worried over anything. As he says, they "are very discouraging." Let us add on the other hand that they are by no means hopeless. It is the rarest thing imaginable where one of these cases of extreme susceptibility to decay cannot be cleared up and the teeth saved. It is a matter of changing the environment. for be it said that this manifestation of rapid and extensive decay is due not so much to the character of the tooth structure as it is to the conditions which surround the teeth. The question arises, how are we to change the environment? To do this requires the co-operation of the dentist and the patient, and let it be understood at the beginning that unless the operator can secure the aid of the patient in these cases he will be practically powerless to control the trouble. A vigorous propaganda of prevention must be undertaken at once, and the disease fought in a systematic way. Instead of seeing the case every "three to five months," it should be seen every month for a time. In addition to filling all cavities of decay, the teeth should be given a careful "prophylactic" treatment each month by polishing the enamel bright and clean and removing every vestige of foreign material from it. This should be supplemented by the patient in a most thoro cleaning of the teeth at least three times a day, and as the operator sees the teeth each month if there is evidence of neglect the patient's attention should be called to it. Eternal vigilance is the price of saving teeth under these circumstances, and for a time the results may be disheartening, but sooner or later, with this kind of effort, the case will begin to clear up and the evidences of extreme susceptibility will gradually subside and the teeth be saved. This is the usual history of these cases when handled properly, and the result is well worth the effort. It is true that occasionally we find a case in which susceptibility seems to persist indefinitely, but this is rare; and a dentist may confidently undertake to control the average case provided he can enlist the aid of the patient.

To summarize—fill all cavities the moment they appear, prevent cavities as much as possible by prophylactic treatment and by care on the part of the patient, and see the case frequently enough so that large cavities do not occur. If this is done it will be seldom or never that decay will occur to the point where "the pulp is involved." It is true that there are discouraging features connected with these cases, but when the operator has finally succeeded in controlling the situation and has won out by saving the teeth, there is no achievement greater than this in a professional way, and no satisfaction equal to it in a sentimental way.

Administrative Code Law for Illinois.—On February 10th, the Committee on Legislation and Appointment of Members to the State Board of Dental Examiners, after a conference with Governor Lowden, issued a letter to the entire membership of the State Society asking their helpful co-operation in advancing the passage of the Administrative Code Bill thru intercession with their legislative representatives at Springfield.

To give a clearer understanding of the committees action in this connection we herewith give some of the salient provisions of the bill which affect us, together with the State Society's part in shaping them.

On the basis of efficiency and economy

Governor Lowden conceived a plan of consolidating the hundred odd boards, commissions, etc., into nine principal administrative departments and establish a budget system of appropriations to take the place of the present inefficient system of committee appropriations.

The departments will be those of finance, agriculture, labor, mines and minerals, public works, charities and corrections, public health, trade and commerce, and registration and education.

Each department will be in charge of a director to be appointed by the governor, with the advice and consent of the senate, for a term of four years. This properly centralizes the responsibility for the proper conduct of these executive departments in the governor.

Together with official representatives of all organizations affected, a delegation of State Society officers and several present and past members of the dental examining board, headed by President Whipple and Vice-President Frazee, held a conference with the governor, at Springfield. Mr. Woodward, in whose charge the bill had been committed by the governor, explained the tentative draft of the bill. The boards for physicians, dentists, pharmacists, opthalmologists, nurses, and barbers are to be grouped into a department with an administrative head, to be known as the director. A general name for this group was desired, and after much argument a vote showed the physicians preferred "department of health," the nurses favored "department of education;" all the others voted for "department of registration," including as it would all professions and trades. The governor then asked for a second choice with the result that a majority favored the title of "department of registration and education," and this it will be.

During the annual clinic of the Chicago Dental Society, President Whipple called a meeting of the Legislative Committee and proposed that the interests of the dentists were of such import as to warrant the committee taking up the matter with the governor, with the view of offering further suggestions to perfect the measure from the standpoint of the dental profession.

Accordingly the Legislative Committee held a conference with the governor on February 10th. After going over the ground in detail, so convinced were the members that our interests would be conserved by the consolidation plan, a decision was reached to issue a letter to the entire membership of the State Society requesting that they individually importune their respective senators and representatives to support the bill. This decision gave great delight and encouragement to Governor Lowden.

It is to be remembered that all professions and trades in this group will retain their respective examining boards as heretofore, altho these will be relieved of executive power. Their function will be to hold examinations and make report of results to the director, who in turn will issue licenses and properly register same. The director will have the power to appoint the members of the examining bodies. We are assured the Legislative Committee will be called on for suggestions in the appointments. The bill is now in conference and will doubtless become a law.—Bulletin Illinois State Dental Society.

Illinois Note.—The Illinois State Society has worked out and adopted a new plan of electing the members of its Executive Council. This body is made up of sixteen members, twelve elective and four ex-officio, namely, the president, vice-president, secretary and treasurer.

To give every section equitable representation the state was divided into seven districts which were assembled into three groups. Groups one and two are down state and are made up of three districts each. Each district has a representative, elected for a three year term. When the law went into effect in 1916 it

was so arranged that the term of one man in each group would expire yearly. The whole group participates in the election of new councilmen regardless of the district he is to represent.

Group three comprises the district of Chicago and has six representatives, the terms of two of whom expire yearly.

One hundred and fifty members of the State Society was made the unit of representation, and the state was so apportioned that each district contains about that number of members.

CALIFORNIA.

Communications and Business.—The three resolutions pertaining to the research work of the University and the N. D. A. were presented and adopted. Dean Millberry spoke, following this action by the Association, as follows:

Dr. Guy S. Millberry: Mr. President and members, it is very gratifying to me to know that you have acted upon this suggestion of your Council, and I trust that during the years to come that the University will be enabled, thru your assistance, to give you some return in a direct way. You have had an exemplification of the value of research thru Dr. Meyer's work. I have been vitally interested in this problem and feel it is my duty to state my position to you in this matter. The question of diverting the revenues of the State Association to several research plans has come before us in many ways. I have maintained that the proper place for this Association to extend its influence for research is in the State of California and particularly in an institution offering all the facilities which are offered in any other institution. Therefore the investment of your money here along this line, I believe, will bring more ample returns than anywhere else.

I should like to tell you in just a moment what the opportunities in the University for research work consists of and in the Department at Berkeley, in which we are primarily interested, we have Dr. Herbert M. Evans, Professor of Anatomy. He has worked in Johns Hopkins University and his work has received the attention of the medical profession of the country. It is said he did more work in research as a student than any of the men in his department. His laboratory in Berkeley, in its equipment and facilities offers better opportunities for the study of the tissues of the human body and of the oral cavity than are available anywhere on the Pacific Coast. One of the teachers in the Department of Anatomy at Berkeley refused a position as the head of a similar department in the University of Oregon, at double the salary he is getting at the University of California, because the facilities for research were so exceptional here. Another man has taken a leave of absence from the University for the ensuing year to pursue studies in the Anatomical Laboratories. Dr. Frederick P. Gay has done a great deal of effective work on typhoid fever during the past two years. The man, who has lectured to you during the past two days on infection, graduated from the University of Zurich and was trained in Koch's Laboratory in Vienna in part. He has been studying, teaching and practicing bacteriology in almost all the principal centers of the world for the past seventeen years. He is always ready to assist us in any way that he can. I feel that in having the co-operation of such a man as Dr. Karl F. Meyer supervising this work we will have as able direction as is available anywhere in the country. A major portion of the research work of Dr. John A. Marshall, during the past two years, was done in the dental school. It is still being carried on.

Some of the members have stated that unless this research work is done under the direction of one group of individuals there will be a duplication of work. As a matter of fact few of us accept their statements until confirmed by other experimenters. In the duplication of experiments they will be conducted with

the same degree of care that is used anywhere else.

It will cost the University about $1,800.00 to undertake this work in the nature of new equipment, supplies, etc.

Since my communication was first addressed to the President of the Association there has come to your notice the opportunity of getting reports more frequently than quarterly or semi-annually. The research laboratory can help to furnish material for the monthly bulletin. Our whole object and ambition is to be of service to the people of the State, to you, and to young men who come into the school to follow you in your practice.

Everything you can do to help the University of California in a propaganda of this kind will redound to your benefit because our interests are your interests. I trust the interest you have shown tonight will continue to be manifest, and I trust we may reciprocate in a way many times more valuable than can be expressed in mere dollars and cents. Gentlemen, I thank you.

The Alameda Course.—The recent course conducted by Dr. J. P. Buckley, of Chicago, under the auspices of the Alameda District Society, was in every sense a success, and of entire satisfaction to all who avail themselves of the opportunity.

It covered a period of three days with evening sessions, and the subject of root canal treatment was most thoroly covered. Men were in attendance from all sections of the State, a total of 116 making up the class. In a subsequent issue of The Bulletin will appear a carefully prepared review of the course.

The session ended with the annual banquet of the Society, which, in this case, was held in honor of Dr. Buckley. The banquet closed the fiscal year of the Society, and inaugurated the new. Officers for the ensuing year were installed, and forecasts a-plenty were made.

The State Association joins with the men of Alameda County in expressing to the Profession as a whole unlimited appreciation of the work, and our thanks in particular, to the conscientious efforts of Dr. Buckley, who has made a host of warm friends on this coast. Remembrances of his work will live among us for a long time.

MEMBERSHIP.

Members paid up for 1914-1915	59
Members paid up for 1915-1916	542
New Members to Date (Paid for 1917)	29
Total	640

Won't this be a fine showing, when the entire number have paid up for 1917? Let's make this a banner year of the Association, and all pay up, and all attend the session this summer.

PENNSYLVANIA.

The Dentist on the Hospital Staff.—The Pennsylvania Bulletin says: The appointment of dentists upon the major staffs of many of our hospitals to positions especially created for them, is indicative of the growing demands of dentistry and of the general recognition of the fact that restoration to healthy condition of the teeth and oral cavity is an important factor in combating systematic disease.

One hospital of which we know has an entire floor of one wing of its building devoted to the purpose of scientific investigation and treatment of diseased teeth and their adjacent hard and soft tissues. In another hospital where similar research work is in progress, of 498 cases of chronic arthritis, 89% showed definite evidence of chronic alveolar abscess, while 1,342 teeth were involved in varying degrees of pyorrhea alveolaris.

Conditions, such as this, make it imperative that hospital authorities have expert dental services in connection with their institutions, hence, in many cases, positions upon their staffs have been offered to dental practitioners up-

on the solicitations of medical members, rather than upon the initiative of the dentist. Where this be not the case, however, the matter should be taken up by our local societies who should endeavor to secure the appointment of one or more of its members upon the staffs of such hospitals that have, as yet, no dentists serving in this capacity. Such appointees, however, must be members of its major staff, otherwise, the dentist is failing to secure the recognition for himself and his profession, commensurate with the service that such an appointment entails.

WYOMING.

The Wyoming State Dental Society are arranging a program to be held in Cheyenne on June 18th and 19th, and a good time is assured to all those who wish to attend, and a cordial invitation is extended to all members in good standing with the National.

The Governor, John B. Kendrick, has been good enough to reappoint the old Board of Dental Examiners, the names of which are James R. Calvert, Evanston, Wyoming; H. E. Tisch, Wheatland, Wyoming, and Peter Appel, Cheyenne, Wyoming. The next meeting of the Board for conducting its examination will be held at Cheyenne June 26th, 27th and 28th, and application for license should be received fifteen days before the meeting of the Board, accompanied by a fee of twenty-five dollars.—Peter Apple, Jr.

KANSAS.

"The Importance of a Bulletin."—The Kansas State Dental Association is to be congratulated on the steps they have taken toward the publication of a Bulletin.

Successful State Dental Societies require several things and there is no one single factor that is of more importance than a Bulletin. A great many of the state societies are beginning to realize the necessity of a publication of this kind and are ready to profit by the experience of other states in this respect.

The Oklahoma Bulletin is now entering upon its sixth year of publication, and we feel that our Bulletin has been a great aid in building up our society to its present standard.

Any organization composed of many individuals, requires that its members be kept in constant and close touch with what is going on within that organization, and this cannot be done in a better way in a state dental association, than with a Bulletin. A Bulletin will serve to advertise your association and its work the year 'round, where without it information concerning your work comes in spasmodic doses at your annual meeting. Such publications serve as a clearing house, for information will undoubtedly create more interest in your association and have a tendency to mould your membership into a more homogeneous working machine.

The splendid showing made by the Kansas dentists at the Tri-State meeting, is evidence that the profession of your state is alive to the necessity of keeping step in the great onward march now being made by dentistry and everything possible should be done by your society to keep up and increase this splendid spirit.

The writer is of the opinion that some state associations are making a serious mistake by trying to make a dental journal out of their Bulletin and thus defeat the very object of a Bulletin. A Bulletin should be what the name implies and nothing more and it seems very unwise to make a very poor journal out of what might otherwise be a good Bulletin.

The boys will read a small publication devoted to matters pertaining to the activities of dental affairs of the state but when you inject other things, you defeat the very object you have sought in such a publication. So I would constantly keep before the editor the necessity of getting out a good bulletin and refrain from publishing a poor dental journal.

I want to urge upon your membership, and especially the officers of your district societies the importance of co-operating at all times with the editor of your publication.

The value of your bulletin to you will depend in a very large measure upon the extent of this co-operation. Every district society officer should consider himself an assistant editor and report everything of a dental nature that takes place within his district. Especially should the time, place, full program, etc., of your district meetings be published. This enables each section of the state to keep in close touch with what is going on in other parts of the State.

The Tri-State meeting could not have been the success it was generally conceded to be without the aid of a Bulletin and no dental organization can hope to reach its greatest usefulness without an intelligent use of printers ink.

Oklahoma sends her best wishes to you for the success of your Bulletin and trusts that it will prove to be of even greater value to you than the Oklahoma Bulletin has been to our Society.—C. R. Lawrence.

COLORADO.

Dentist and Oculist for Mining Towns.—The Colorado Fuel and Iron Company has undertaken to extend the work of its medical department so as to provide care for the eyes and teeth of the school children in its mining camps, beginning with the lower grades. An oculist and a dentist have been employed under the direction of Dr. R. W. Corwin, chief surgeon, and they soon will begin a series of visits to the various mining regions. The Company is also co-operating with the board of education of the city of Pueblo to secure similar services for the children of its steel mill workers.

In deciding upon this course the Company has been influenced by the manifest importance of proper care of teeth and eyes of children. Such care, exercised under the supervision of competent specialists, is of a value which scarcely can be over-estimated, both in preserving the health of the child and in promoting the highest degree of mental and physical vigor in later life.

It is a demonstrated fact of science that many a case of supposed mental deficiency in childhood really is due to defective vision or teeth, or some other physical infirmity. In assuring the children every possible chance for success and happiness in later life, the care of eyes and teeth ranks in importance with the providing of the best educational facilities.

In undertaking this work, the Company will co-operate with its employees and with the public school authorities in the communities affected. The plan of action which has been decided upon was submitted to Mrs. Mary C. C. Bradford, Colorado State Superintendent of Public Instruction and received her approval.

Dr. W. A. Brierley has been employed as chief dental surgeon. He is a graduate of the Colorado College of Dental Surgery, and has been in active practice in Denver for nineteen years. He is a former president of the Colorado State Dental Association.

The Colorado laws require the school authorities to make examinations of pupils and report to the parents any serious defects, especially of the eyes or teeth. The Colorado Fuel and Iron Company recently decided, in order to make this work as effective as possible in its mining communities, to go beyond the legal requirements by co-operating with the school authorities thru its medical department, and making provision not only for making the required inspections, but also for having the necessary work done. Arrangements are being made with the boards of education to have the inspection work done during school hours, as a part of the regular educational course. The dentist and oculist, traveling separately, will visit all the camps in turn, and it is expected that they will reach each mine about twice a year. Be-

fore the first visits notices to parents will be distributed in the camps, explaining the work of the specialists and requesting their co-operation.

Start with Smallest Children.—On the first inspection trips early this year, the work will be confined to the children of the first grade. The dentist will clean and examine teeth, furnish tooth brushes without charge, and fill teeth when necessary. The oculist will test the eyes of the children and prescribe glasses when they are needed. There will be no charge in addition to the regular medical fee for any of this work, except for glasses, and these will be furnished at actual cost. When it is found necessary to fill a child's teeth or to use drops in order to make a more thoro examination of his eyes, the written consent of the parents will be secured. One or more dental nurses or assistants will be employed to aid the chief dental surgeon in his work.

It is expected that this addition to the medical work later will gradually be extended to include additional groups of older children. The board of education of Pueblo, with the co-operation of The Colorado Fuel and Iron Company, recently arranged to furnish dental work in the first and second grades of the schools of that city. Under this arrangement the children of employees of this Company are insured the same benefits at both the Steel Plant and the mining camps.—Bulletin of The Colorado Fuel & Iron Co.

Rockefeller Company to Care for Children.—Denver, Jan. 27.—The Colorado Fuel & Iron Co., in which John D. Rockefeller is the controlling power, has undertaken to care for the eyes and teeth of the school children in its mining camps, beginning with the lower grades, it was announced here today. The company is co-operating with the board of education of the city of Pueblo to obtain similar service for the children of its steel mill workers. An article to appear in the Colorado Fuel and Iron Industrial Bulletin under date of Jan. 31 explains that this innovation has been decided upon by the company because of the manifest importance of care of teeth and eyes in children in preserving the health and promoting the highest degree of mental and physical vigor in later life.

THE NATIONAL DENTAL JOURNAL.

Have you received the January and February copies of the National Dental Association's Journal? If not, it must be for one of three reasons:

1. You are not a member of the state and national societies.
2. You have not paid your dues.
3. On account of an oversight your name has been omitted from the list of subscribers.

If, for any of these reasons you have not received a copy, you are the loser. If in doubt, borrow a copy, read it thru from cover to cover, then get busy. No reputable dental practitioner who aims to keep abreast of the times in the field of dentistry can afford to be without it.—Pennsylvania Bulletin.

ARMY DENTAL CORPS.

Bad Teeth, Flat Feet, Enemies of Recruits.—The worst enemy of the United States army right now is the examining physician, according to the records of Lieut. William N. Richardson, recruiting officer in charge of the naval station here.

Scores of men, apparently sound physically, have been refused because of some minor ailment, such as bad teeth or flat feet. In a number of these cases waivers on those defects are obtained from Washington in a case where they can be remedied. In fact, the government has officially authorized a revision of the rule on flat feet, so that now those born with this impediment will not have it held so much against them.

The week completed Saturday showed a lively list of applications, numbering in all 90. Still only 25 of these were accepted, the others giving evidence of

some minor deficiency, such as would not impair the working ability of young men in any other line. According to the officers here the recruiting stations have seen a better business since a week ago, when the war crisis came to a head, than at any time since the stations opened.

Week of Jan. 8th, 1917.—The following changes of station of dental surgeons are ordered, effective February 1st, 1917: 1st Lieut. A. R. White, Schofield Barracks, to these headquarters, relieving 1st Lieut. A. P. Matthews, who will proceed to the Department Hospital relieving 1st Lieut. O. G. Skelton, who will proceed to Schofield Barracks for duty. (Jan. 8, H. D.)

1st Lieut. Rex McK. McDowell, D. C., Brownsville, to duty at Base Hospital, No. 3, Brownsville.

1st Lieut. Lee S. Fountain will proceed to San Juan, P. R., for duty for a period of five months, and at the expiration of this period will return to his station at Columbus Barracks. W. D., Feb.1.

1st Lieut. E. H. Valentine, D. C., Fort Caswell, N. C., about Feb. 1st, 1917, to Fort Moultrie, S. C., for temporary duty for the period of sixty days.

1st Lieut, T. L. Smith, D. C., temporarily at Fort DuPont, Del., about Feb. 1st, 1917, to Fort Meyer, Va., for temporary duty for 30 days.

S. O. 33, War Department, Feb. 9th, 1917. Extract No. 19. The advancement from the grade of first Lieutenant to that of captain, with rank as Captain from June 3rd, 1916, under the provisions of section 10 of an act of Congress approved June 3rd, 1916, of the following named dental surgeons is announced: Dental Surgeon Robert T. Oliver, Dental Surgeon S. Davis Boak. By order of the Secretary of War.—H. L. Scott, Major General, Chief of Staff.

Army Dental Corps, Feb. 6th and 7th.—First Lieut. Minot O. Scott, dental surgeon, Fort Sam Houston, Texas, to Fort Reno Remount Depot, Okla., for temporary duty for such time as may be necessary, not to exceed one month.

First Lieut. William A. Squires, dental surgeon, Fort Sam Houston, Texas, to the Fort Reno Remount Depot, Okla., for temporary duty for one month for the purpose of rendering dental service.

NAVY DENTAL CORPS.

Congressional Record Feb. 27th, 1917.—Nominations to the U. S. Senate. The following named acting assistant dental surgeons to be dental surgeons in the Navy from the 29th day of August, 1916: Emory A. Bryant, William N. Cogan, Harry E. Harvey, James L. Brown, Eugene H. Tennent, Joseph A. Mahoney, Leon Martin, Joseph D. Halleck, Anson F. McCreary, Marion E. Harrison, Ernest W. Lacy, Lucian C. Williams, Harry W. Blaisdell, Harry D. Johnson, Paul G. White, Cornelius H. Mack, Arthur A. Rehm, Hugh T. Meyers, William L. Darnell, Logan A. Willard, John R. Barber, George H. Reed, Franklin L. Morey, John V. McAlpin, Marson W. Mangold, Edward E. Harris, Alexander G. Lyle, Alexander J. Zuehlke, John W. Crandell, Thomas L. Sampsell, Thomas J. Daly.

The following named assistant dental surgeons in the Dental Reserve Corps, to be assistant dental surgeons in the Dental Reserve Corps of the Navy from the 29th day of August, 1916: Williams Donnally, Myron L. Rhein, Clarence J. Grieves, Charles W. Rodgers, Clyde M. Gearhart, David J. Alexander, Walter C. Miller, Edwin N. Cochran, Gordon H. Claude, Charles C. Galloway, William M. Thebaut, George C. Fowler.

The following named citizens to be dental surgeons in the Navy for a probationary period of two years from the 20th day of February, 1917. Griffin G. Frazier, District of Columbia; Rufus A. Ferguson, Virginia; Alfred W. Chandler, New Jersey; Carl S. Ziesel, New Jersey.

Nominations in U. S. Senate, February 14: Douglas B. Parker, a citizen of New York, to be an assistant dental

surgeon in the Dental Reserve Corps of the Navy from the 30th day of January, 1917.

PARIS—THE WAR.

Paris, Feb. 8, 1917.

American Ambulance at the French Front.—A new sanitary section of American ambulances has just left for the front. Like the preceding ones, this section is composed of twenty automobile ambulances and seven auxiliary automobiles (reserve cars, shop, kitchen, etc.). The initial cost of one of these sections is $30,000 (150,000 francs) and the yearly cost of maintenance is $15,000 (75,000 francs). At present there are eight sections in the service, the initial cost of which is $240,000 (1,200,000 francs), and the yearly maintenance of which costs $120,000 (600,000 francs). All the American ambulance men are students of the large universities who have volunteered for this service. More than fifty of these have already been decorated with the war cross, and two have received the military medal; some have been killed. The funds for the American ambulances have been furnished by American friends of France. The inspector general of the American ambulance field service is Mr. A. Piatt Andrew.

The president of the council of ministers has just received a telegram from Mr. Frederick Allen, president of the National Allied Relief Committee, informing him that the Allied Bazaar at Boston, arranged by the committee, yielded $450,000 and that $447,000 was realized from the bazaar held at Chicago.

Nurses as Roentgenographers.—The undersecretary of state of the military health service has decided to intrust the roentgenographic work to the nurses of certain sanitary formations. Therefore he has ordered the directors of the service to inform the temporary nurses in the military hospitals subject to their orders that a course in the theory and practice of roentgenography will soon be begun at the Edith Cavell school in Paris, under the direction of Mme. Curie. —The Journal of the American Medical Association.

GENERAL.

"Bone Dry" But Still Moist.—News items appeared in the eastern papers recently of which the following, from the Baltimore Sun of February 24 is a specimen:

"Danville, Va., Feb. 23.—So great has become the demand here for a certain proprietary medicine which contains 25 per cent. alcohol, that the city police Department has laid the condition before the Prohibition Commissioner. An investigation has just led to the discovery that during Saturday and Sunday more than 700 bottles were sold in Danville and Schoolfield. The police had to deal with more drunkards this week than during the entire month of January and each man admitted that he became intoxicated on the medicine."

The Journal telegraphed to the chief of police of Danville, Va., asking for the name of the proprietary medicine containing 25 per cent. alcohol which was reported to be responsible for several cases of intoxication. The laconic but all-sufficient reply from the Danville chief of police was: "Name medicine Hostetter's Bitters." It is surely more than a coincidence that the alcohol-containing "patent medicines" seem to be most widely advertised and most popular in those parts of the country which are commonly designated as "dry." It is a pity that there are no statistics to show the change in the volume of sales of "patent medicine" "tonics" that follow the enactment of prohibition laws. Far be it from The Journal to depreciate the spread of prohibition. So long, however, as individuals can sell, unrestrictedly, preparations containing small amounts of plant extractives in alcohol one-half the strength of raw whisky under the guise of "tonics," prohibition will not

have the terrors for certain persons it might otherwise possess. In view of the new "bone dry" law recently enacted it would seem that now is a good time for the Internal Revenue Department to turn its attention to a class of remedies that might bring to the government considerable revenue—the alcoholic "patent medicines."—The Journal of the American Medical Association.

Another Shortage of Salvarsan.—The indications are that the supply of salvarsan and neosalvarsan in this country has again reached the point of exhaustion. To the medical profession, who know the unfortunate results of a shortage of salvarsan on the health of the present and future generations, the situation is an exasperating one. Is there no remedy? Is our government impotent to relieve the condition? Congress made our patent law; it certainly has the power to suspend the patent on any preparation that the patentee is unable to, or does not, supply when such suspension is in the interest of public health. It is well known that at the time of the previous shortage the Dermatologic Research Laboratory of Philadelphia manufactures the product under the name of arseno-benzol. It is presumed—at least hoped—that in the present shortage the laboratory will again manufacture the product. It should meet with no legal difficulty, as the agents for the salvarsan manufacturers have intimated that they would not object to such supply of the product at times when they themselves were not able to furnish it. But such a relief for the situation is not a permanent relief—it is a makeshift. Monopolies on medicaments such as diphtheria antitoxin, salvarsan and the like are against public interest. The United States has granted process and product patents on salvarsan; even if anyone in this country produced a salvarsan product or derivative which would be more curative and more valuable—on account of being less toxic, for instance—the patentees could effectually prevent its manufacture and sale. Again it should be emphasized that the fact that a most important drug is unavailable is the result of an act of Congress, and Congress has the power to modify its action so that the remedy may be made available. —The Journal of the American Medical Association.

Local Anesthesia for Children.—La Chapelle reviews his experience with various operations done on children under 7 with local anesthesia alone. The list includes 9 herniotomies on children under 4. There were no mishaps or drawbacks, and no restlessness except at the first prick of the needle, and this was no more than is observed at the outset of general anesthesia. On the whole, his impression is that local anesthesia is about as applicable to children as to adults. Even with the latter it is advisable to divert the attention from the operation. The advantages of avoiding general anesthesia are likewise the same as for adults. He mentions in proof of this that one boy of 10 whose appendix was removed under local anesthesia had an infant brother, apparently healthy, who died a few hours after a small nevus on the forehead had been excised under general anesthesia.—The Journal of the American Medical Association.

Confessions of a Chiropractor.—An article—actually an advertisement—in the Ogden (Utah) Examiner, October 1, 1916, evidently intended as an argument in favor of chiropractic, contains statements which show how little use "healers" of that branch have for education. Preliminary education is foolish, nay burdensome. Note the following:

Education which has no relation to the theme or subject under consideration becomes burdensome and therefore detrimental.

Greek and Latin, for example, are **both dead tongues and, outside of those engaged in translating manuscripts, are**

used to display pedantry; they are of no value to chiropractors.

This is especially worth nothing:

They would compel us to study bacteriology. This is of no value to the chiropractor. It is not worth while to spend time, energy and money to microscopically examine infinitesimal mites or to group and classify them.

Of course, there is no such thing as blood poisoning, or infections; diphtheria and its cure with antitoxin are fabrications from some overworked anemic intellect, and even if there are contagious diseases, smallpox, spinal meningitis, infantile paralysis or others, all, forsooth, may be cured by the magic touch of the chiropractor applied to the patient's spine. Why bother one's head regarding microbes? As to materia medica, oh, horrors!

We would also be required to learn "Materia Medica." What on earth would we do with that ponderous knowledge, we who abhor the very name of drugs and repudiate their use?

There is also chemistry, which has nothing in common with Chiropractic and cannot be made adjunct to it.

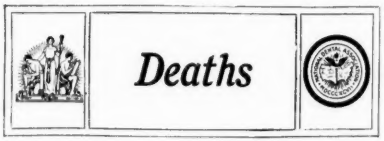
Evidently education generally has "nothing in common with chiropractic" or it is that chiropractic has nothing in common with education?

Greek, Latin, Bacteriology, Chemistry and Materia Medica would be of no more use (to Chiropractors?) than a whipsocket would be in an automobile or a smokestack to an aeroplane.

What on earth is the use of spending four years in high school, two years in college, four years in a medical school and a year or more as an interne in a hospital and getting all that "burdensome and detrimental" knowledge, when you can become a full-fledged Chicropractor, and after three months or possibly less of correspondence study have the right to treat the sick!

All of this reminds one of the old adage that "A wise man knows a fool because he has once been foolish, but a fool cannot know a wise man because he has never been wise."—The Journal of the A. M. A.

Solvay Company President Dies.—Syracuse, New York, February 27.—Frederick R. Hazard, president of the Solvay Process company, with plants here and in Detroit, died at the Women's and Children's hospital tonight after two weeks illness caused by an infected tooth. The poison from the diseased tooth spread thru his system and despite two operations and the treatment of specialists from all over the country, he rapidly grew worse. Mr. Hazard was treasurer of the Semet Solvay Company, treasurer of the By-Products Coke Corporation, president of the Solvay Collieries Company, president of the Syracuse Coke Company and an officer and director in several allied corporations. Mr. Hazard was a member of the University, Citizens and Century Clubs, Syracuse, and the Metropolitan and University Clubs, New York City. He was 59 years old.—Special to the Free Press.



C. J. Sullivan, D. D. S., Fall River, Massachusetts; member Massachusetts State Dental Society; a member of Southeastern Dental Society, and a member of the National Dental Association. Died at his home February 16, 1917.

Joshua Jarrett Amoss, D. D. S., Jarrettsville, Md., Baltimore College of Dental Surgery, 1914; aged 23, Member of Calvary M. E. Church, Jarrettsville, Md.; Member of Knights of Pythias Lodge of Jarrettsville, Md.; Member Psi Omega Fraternity; Won first prize for Mechanical Dentistry and second prize for Non-Cohesive Foils; died February 18.

Announcements

NATIONAL SOCIETIES.

National Dental Association, New York City, October 22-26.

National Association of Dental Faculties—New York City, October 19 and 20.

National Association of Dental Examiners, New York City, October 22-23.

STATE SOCIETIES.

April.

Alabama—Birmingham, April 10.

Michigan—Detroit, April 12, 13 and 14.

South Dakota—Sioux Falls, April 26-27.

Texas—Houston, April 25, 26, 27 and 28.

Virginia—Norfolk, April 17, 18 and 19.

West Virginia—Fairmont, April 11, 12, and 13.

May.

Arkansas—Little Rock, May 3, 4 and 5.

Illinois—Quincy, May 8, 9, 10 and 11.

Indiana—Indianapolis, May 15, 16 and 17.

Iowa—Des Moines, May 1, 2, 3 and 4.

Kentucky—Louisville, May 9, 10 and 11.

Massachusetts—Springfield, May 3, 4, and 5.

New York—Rochester, May 10, 11 and 12.

South Carolina—Columbia, May 8.

Southern California — Los Angeles, May.

Vermont—May 16, 17 and 18.

June.

Colorado—Glenwood Springs, June 21, 22, 23.

Connecticut—New London, June 14, 15, 16.

Florida—Atlantic Beach, June 20, 21 and 22.

Georgia—Brunswick, June.

Maryland—Baltimore, June 6, 7, 8, 9.

Nebraska—Omaha, June 4, 5, 6 and 7.

New Hampshire—Soo-Nipi, June 20, 21 and 22.

North Carolina—Durham, June 27, 28 and 29.

Pennsylvania—Philadelphia, June 26, 27, 28.

Tennessee—Memphis, June 19, 20, 21 and 22.

Utah—Salt Lake City, Hotel Utah, June 28, 29 and 30.

Washington—Tacoma, June 21, 22 and 23.

Wyoming—Cheyenne, June 12.

July.

New Jersey—Atlantic City, July 11, 12, 13.

Wisconsin—July 10, 11, 12.

October.

National Capital—Chamber of Commerce, October 2.

Rhode Island—Providence, October.

November.

Arizona—Phoenix, November.

December.

Ohio—Cleveland, December 4, 5, 6.

TEXAS STATE BOARD OF DENTAL EXAMINERS.

The next meeting of the Texas State Board of Dental Examiners will be held in the Central High School Building, Houston, Texas, beginning Monday morning, June 18th, at 9 o'clock. No diplomas exchanged; no reciprocity.

A fee of $25.00 should be in the hands of the Secretary not later than June 13th. For further particulars and application blank, address,

C. M. McCauley, Secretary,
840 Wilson Bldg.,
Dallas, Texas.

MONTANA STATE BOARD OF DENTAL EXAMINERS.

The Montana State Board of Dental Examiners will hold their next session for examination on July 9th, 10th, 11th, 12th and 13th, in Helena, Montana. Applications must be in the hands of the Secretary ten days before the 1st of July.

For information inquire of

DR. G. A. CHEVIGNY, Secretary,
107 Clark Block,
Butte, Montana.

NORTHERN OHIO DENTAL ASSOCIATION.

The Sixtieth Annual Meeting of The Northern Ohio Dental Association will be held at Hotel Statler, Cleveland, Ohio, June 7th, 8th and 9th, 1917.

An attractive program is being arranged and this promises to be one of the most interesting meetings held by The Northern Ohio Dental Association.

C. H. CLARK, Secretary,
Youngstown, Ohio.

VERMONT STATE DENTAL SOCIETY.

The meeting place of the Vermont State Dental Society has been changed from Rutland to Burlington. This meeting will be held May 16th, 17th and 18th, 1917. This promises to be one of the best meetings ever held in the history of the Vermont State Dental Society.

P. E. MELLEN, Secretary,
Middlebury, Vermont.

STATE OF OKLAHOMA BOARD OF DENTAL EXAMINERS.

The next regular semi-annual meeting of the Oklahoma Board of Dental Examiners will be held in Oklahoma City, Oklahoma, Skirvin Hotel, beginning June 25th. Graduates of reputable colleges presenting fifteen units credit in literary work only eligible to take examination. For information write

DR. H. OVERBEY, Secretary,
Ryan, Oklahoma.

PHILADELPHIA DENTAL COLLEGE.

Members of Class 1907 of Philadelphia Dental College will hold a Reunion at Philadelphia, April 17th and 18th, 1917. Every member is expected to attend this Reunion.

C. W. VIVIAN,
10 Asylum Street,
Hartford, Conn.

SOUTH DAKOTA STATE DENTAL SOCIETY.

The next annual meeting of the South Dakota State Dental Society will be held at Sioux Falls, April 26th and 27th. All members of the National Dental Association, or any State Society are cordially invited to attend.

ERNEST W. ELMEN, Secretary,
Sioux Falls, S. Dak.

NORTH CAROLINA DENTAL SOCIETY

The North Carolina Dental Society will hold its forty-third annual meeting at Durham, N. C., June 27, 28 and 29, 1917.

R. M. SQUIRES, Sec'y.,
Wake Forest, N. C.

IOWA STATE DENTAL SOCIETY.

The 55th annual meeting of the Iowa State Dental Society to be held at Des Moines, Iowa, May 1, 2, 3, 4, 1917, in conjunction with the Dental Manufacturers' Club of the United States, forming the Mid-west Dental Convention and Exhibit, will be one of the largest meetings held this year. The railroads and hotels are already laying plans to extend every convenience possible to those who will be in attendance. The several committees in charge have their arrangements well under way and the Executive and Clinical committees have definitely secured three-fourths of their talent.

Iowa has always endeavored to obtain and present the highest talent to the profession and has established a standard that every one could look well to. And this year, her 55th Anniversary, every effort will be expended to surpass any and all previous successes. The very latest and reliable opinions covering the many phases pertaining to modern Dentistry will be expressed by tne very best men obtainable in their chosen specialties.

Each day will be divided into morning, afternoon and evening sessions. In the mornings, lectures, papers, etc., afternoons will be devoted to clinics and schools in which the attendance will be divided and each be conducted without interruption by a constantly changing audience. The evening sessions will be given over to Medical and Dental lecturers who will present subjects of interest to the public as well as the profession and to which the General Public will have free admission. They will bear upon such topics as Oral Hygiene, Public Health, Right Living. Our Physical being, etc. In addition and at opportune times, moving pictures other than those used by the lecturers, and of vital and deep interest to the profession, will be presented. The pictures will include War Front scenes, Surgery, Orthodontia, Dental Manufactories, Metallurgy and Travel. All intensely interesting and educational. And in addition to all this, the Dental Manufacturer's Club will occupy a 1000 feet running floor space with a specially decorated exhibit that will not be surpassed anywhere for splendor and thoroness and refinement of display, together with exhibits and demonstrations by gentlemen of highest character and ability. Everything will be uniform, standard and conducted with regulation and precision, without bluster and noise and embarrassment to the visitor.

All this to be carried out as completely as possible and appreciated by the attending profession from the adjacent states to which an urgent and sincere invitation is extended. All lectures, clinics and exhibits to be held in one building and every feature easy of access regardless of climate conditions. Even lunches will be served on the main floor.

C. M. KENNEDY,
605 C. N. B. Building,
Des Moines, Iowa.

TEXAS STATE DENTAL SOCIETY.

The next annual convention of the Texas State Dental Society will be held in Houston, April 25th to the 28th. There will be no night sessions.

We are planning to make this one of the greatest meetings ever held by the Texas State Dental Society.

W. O. TALBOT, Secy-Treas.,
Fort Worth, Texas.

CONNECTICUT STATE DENTAL ASSOCIATION.

The fifty-third annual meeting of the Connecticut State Dental Association will be held at the Hotel Griswold, New London, Connecticut, June 14th, 15th and 16th, 1917.

We extend a cordial invitation to all members of the National Dental Association.

GEO. S. B. LEONARD, Secretary,
Mystic, Conn.

FORTY-SEVENTH ANNUAL MEETING SOUTH CAROLINA STATE DENTAL ASSOCIATION.

The forty-seventh annual meeting of the South Carolina State Dental Association will convene May 8, 9, 10, in Columbia, S. C., at the Jefferson Hotel.

The officers of this association are endeavoring to have a most interesting and instructive meeting as the following clinics and clinicians will show.

Dr. Weston A. Price, Cleveland, Ohio. subject to be announced.

Dr. Thomas P. Hinman, Atlanta, Ga. Subject: The Treatment and Filling of Root Canals.

Dr. George Hinkson, Philadelphia, Pa. Subject: Metallography of Dental Alloys.

Dr. Geo. Wood Clapp, New York. Subject: The Business Side of Dentistry.

Dr. Robin Adair, Atlanta, Ga. Subject: Treatment of Pyorrhea Alveolaris.

Dr. J. R. Mitchell, Atlanta, Ga. Subject: Removable and Anatomical Bridgework.

There will also be a clinic given on Dental Radiography.

Progressive clinics have been instituted at these meetings, thus insuring prompt attendance and economy of time.

ERNEST C. DYE,
Recording Secretary,
Greenville, S. C.

NATIONAL ASSOCIATION OF DENTAL FACULTIES.

Office of the chairman of the
Executive Committee,
B. HOLLY SMITH, M. D., D. D. S.,
405 N. Charles St., Baltimore, Md.

The National Association of Dental Facilities will hold its meeting on Friday and Saturday, October 19th and 20th, at the Hotel Astor, New York City.

The Executive Committee to meet at 9 A. M. and General Sessions at 10 A. M. on Friday.

B. HOLLY SMITH, Chairman.

NEBRASKA STATE DENTAL SOCIETY

The Nebraska State Dental Society will hold its 50th annual meeting June 4, 5, 6, 7, 1917, being postponed from the announced date of May 14, to 17, 1917.

HERBERT E. KING, Secretary,
446 Bee Building, Omaha, Nebraska.

VERMONT STATE DENTAL SOCIETY.

The annual meeting of the Vermont State Dental Society will be held in Rutland, Vermont, May 16th, 17th and 18th. The officers are planning to make this the best meeting ever held in the history of the Vermont State Dental Society.

P. E. MELLEN, Secretary,
Middlebury, Vermont.

ARKANSAS STATE DENTAL ASSOCIATION.

The annual meeting of the Arkansas State Dental Association will be held at the Marion Hotel, Little Rock, Arkansas, May 3, 4, and 5.

H. J. CRUME, Secretary,
Hamburg, Arkansas.

MASSACHUSETTS STATE DENTAL SOCIETY.

The Fifty-third annual meeting of the Massachusetts State Dental Society will be held on May 3, 4 and 5, 1917, at Springfield, Massachusetts.

J. ARTHUR FURBISH, D. M. D.,
Secretary,
400 Marlborough Street,
Boston, Massachusetts.

NATIONAL ASSOCIATION OF DENTAL EXAMINERS.

The next meeting of the National Association of Dental Examiners will be held October 22nd and 23rd, 1917, at Hotel Astor, New York City.

J. A. WEST, Secretary,
Des Moines, Iowa.

TENNESSEE STATE DENTAL SOCIETY.

The Golden Jubilee of the Tennessee Dental Society will be held in Memphis, June 19, 20, 21, 22. The officers promise the most attractive program ever presented in the South. Social features will be prominent. All ethical dentists invited—come and bring your wives.

D. M. CATTELL, President.
C. E. HINES, Secretary.

KENTUCKY STATE DENTAL SOCIETY.

The next annual meeting of the Kentucky State Dental Association will be held at Louisville the three days previous to the Kentucky Derby—May 9, 10, 11, 1917. Address all correspondence to the Secretary.

W. M. RANDALL, Secretary,
1035 Second Street,
Louisville, Kentucky.

SOUTH CAROLINA STATE DENTAL SOCIETY.

The forty-seventh annual meeting of the South Carolina State Dental Association will be held in Columbia, S. C., at the Jefferson Hotel, commencing May 8th, 1917.

ERNEST C. DYE, Secretary,
Greenville, S. C.

CALIFORNIA STATE DENTAL ASSOCIATION.

Santa Cruz, California, Feb. 28, 1917.

My Dear Doctor: The spirit of the times is bringing us nearer together—the great European disaster reaching over into America developing conditions, the result of which is hard to tell at the present time, has the influence of bringing together those interested along the same lines. You and I are seeking our bread and life support thru similar channels.

"United we stand, divided we fall."

The world never knew a time when this saying carried more force—I need your help, perhaps I can help you. If so, the closer we bind ourselves in friendship and mutual understanding, the better it is for us both.

The California State Dental Association is planning for a meeting in the early summer—the Executive Council is seeking the best way to reach you and have you present. We want you and when we get you there we will shake your hand until your arm is lame. We will put our arms around you and feed you the best mental food that we are capable of supplying. We will have some of the country's strongest men, from far and near, who will serve this food in the most nourishing and practical manner.

Henceforth, you will be kept posted as to developments—you will be informed as to the time and place, and if you love your profession, come and help us do this up right. Very truly yours,

J. P. PARKER, Vice-Pres.

San Jose, California, Feb. 28, 1917.

I am in full sympathy with the above letter, and can only emphasize what Dr. Parker has said, by urging upon you all the benefits to you and your patients, derived from a few days spent with us in this Post-Graduate School. May we not count on you?

I wish further, to call your attention to the fact that in Sacramento, at the present time, more laws for this State are being enacted, and some of the old ones either being wiped out or altered.

We feel that our law is a good one and should not be tampered with in any degree. We feel that it gives good protection to the general public, those who must trust themselves in the hands of the Dentist, and that the present Board System of Examinations has safe-guarded the interests of all. Hence, I find pleasure in asking you to act with all of us, both members and non-members, in advising Legislators from the various districts that we desire no change in the

Dental Law. Will you not address such a letter to your Senator and Representative?

Thanking you in advance for this act of co-operation, and again expressing a wish to see you present at our meeting this summer, I am,

Fraternally yours,

J. W. DAVY, President.

FOUR STATES POST GRADUATE DENTAL MEETING.

Alabama, Mississippi, Texas, Louisiana. Special Detailed Technical Courses Following the General Meeting.

From the reports that are coming in from the various Committees of the Four States' Meeting as regards the great interest being manifested in the forthcoming Alabama, Mississippi, Texas and Louisiana Post-Graduate Dental meeting, **it will be the greatest meeting in the history of the Dental profession.** This interest is exceeding the expectations of various committees, which goes to show that the average dentist is alive to the necessity of keeping abreast in the forward movement of his profession, and that he is ready and willing to grasp the opportunities offered him in advance.

Dr. S. H. McAfee, Chairman of the Scientific Program Committee, submits the following report of progress to date:

Nerve Blocking.

Dr. Arthur E. Smith, Chicago College of Medicine and Surgery.

Dr. Smith is one of the foremost instructors in this subject before the profession at present. We quote from a recent letter from Dr. Smith, as follows:

"I will come prepared to cover the subject of 'Nerve Blocking' of interest to dentists in all of its phases, including the various phases of local anesthesia.

"My work will be demonstrated thru the medium of wet dissected specimens, skulls, slides, impressions, kymographic tracings, and about two hundred stereopticon slides, something like six thousand feet of motion pictures."

Removable Bridge Work with Most Advanced Lock and Saddle Construction.

Instructor not yet positively chosen. In communication with Dr. Carl G. Knocke, of Chicago; Chayes Dental Club, of New York, and others.

Removable Bridgework Without Mutilation of Sound Teeth.

Dr. Norman Beverly Nesbett, of Harvard University Dental School, Boston, Mass.

Dr. Nesbett has a new technic of constructing clasps cast from a new clasp metal alloy, which possesses remarkable resiliency, strength, etc., and the method contemplates replacing lost teeth without cutting into or mutilating abutments.

Apiectomy, Periodontia, Prophylaxis, Stomatology, Exodontia, Etc.

Dr. Carl D. Lucas, Indiana Dental College, Indianapolis, Ind.

Dr. Lucas will show new and original technic in root amputation, removal of third molars, preparation of mouth for permanent plates a few days after extraction, root surgery for pyorrhea, etc. Dr. Lucas is an essayist and clinician of national reputation.

Treatment of Fractures of Maxillae and Mandible.

Dr. J. P. Wahl, Loyola University School of Dentistry, and Charity Hospital, New Orleans.

Root Canal Preparation and Filling, Ionic Medication, Radiography, Etc.

(In communication with Dr. Alonza Milton Nodine, of New York City.)

A partial list of films already prepared (with more in preparation):

The Extraction of Teeth Under Nitrous Oxid Anesthesia, by Dr. J. D. Thomas.

Periodontia Clinic, Prophylaxis for Pyorrhea, by Dr. Paul L. Stillman.

Angle's Original Method of Taking Impressions.

Dr. Edward H. Angle's Application of Angle's Ribbon Arch Appliance for Correction of Malocclusion.

Root Canal Filling, by Dr. R. Ottolengui.

Apiectomy, by Dr. Joseph M. Levy.

Root Amputation, by Dr. A. Berger.

Making Porcelain Teeth.

Dr. Alexis Carrel Demonstrating His Latest Methods at the Hospital Rond Royal at Compiegne.

Plastic Surgery of the Face and Jaw, by Dr. Pont at Lyon, Re-education Center at Vizille.

Extraction of a Shrapnel Ball from the Region of the Heart, by Prof. O. Laurent at Grand Palais.

Functional Conditions Contracted from Life in the Trenches.

American Method of Bone Grafting as Performed in European War Hospitals by Dr. F. H. Albee, of New York.

Additional films are being prepared weekly. They run from fifteen to forty-five minutes each. It is stated that these films show the technic of the various operations in amazing detail.

General Progressive Clinic.

All or a part of one day will be devoted to this feature, which is to be part of the general four days' meeting.

Special Detailed Technical Courses.

Immediately following the four days' general meeting. The object sought here is to afford opportunity for those who may wish to do so to obtain more personal instruction in the technic in any of the subjects in which they may be specially interested—such instruction as can only be given to small classes of ten or fifteen men each. These will be enrolled in the order of applications for membership, and when classes are filled no additional men can be taken therein. A small additional fee will be charged those wishing to take advantage of this special feature.

For the Dentist who really wants to come and learn something and not fritter away his time, as is so often customary to the average "Convention," personally we believe this will be the opportunity of a lifetime.

Dr. Charles Shepard Tuller, Chairman Committee on Exhibits, reports that the exhibits will be one of the attractive features of the meeting, and be held on the same floor.

Dr. O. Loeffel, Chairman of Committee on Arrangements, Railroad and Hotel Rates, reports that the headquarters of the meeting will be the Grunewald Hotel, which is a modern, up-to-date building and well ventilated.

The convention hall is surrounded by windows on all sides, southern exposure, and situated in the heart of the business section and convenient to all car lines.

The entire top floor of the Hotel Grunewald, the same on which our meeting takes place, will be reserved for members, and those members desiring to take advantage of this offer must write at once for reservation.

The various hotels are offering rates as low as $1.00 per day and up.

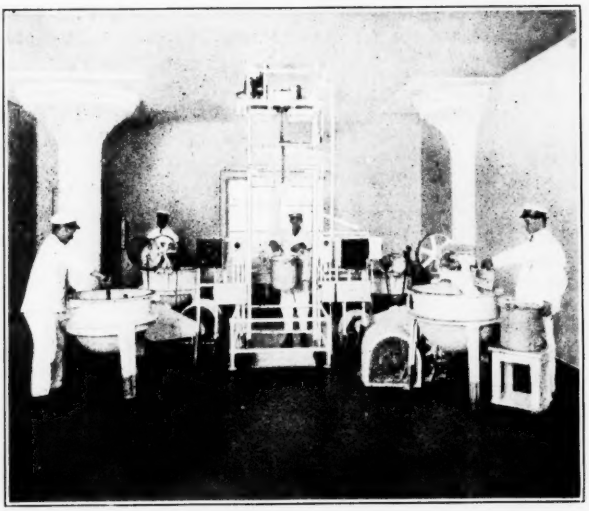
The railroads will give one and one-third rates for round trip.

Now, Doctor, after reading this letter, put the question: Can I afford to stay at home while my neighboring practitioner is being instructed at this meeting? The answer, NO! Therefore, while it is fresh in your mind, sign the enclosed application blank, accompanied by your check, and send it to the Chairman of Credentials and Registrations of your State, or to the Chairman of the nearest State, and receive a membership card, which will entitle you to attend this great instructive meeting.

Incidentally, I might say that the assessed fee was based on the possible attendance and figured very closely to just about cover the expense of the instructors and incidentals.

Yours truly,

J. P. WAHL, D. D. S.,
Chairman Publicity Committee.
New Orleans, La.



MIXING MACHINES.

KOLYNOS

In making a compound of Kolynos character proper mixing is as essential as pure material. The "churning" must be watchfully controlled as to time, speed and temperature, and constant protection from dust and evaporation is provided for.

You are assured that the tube used by your patient contains everything required by the formula—and nothing else. It is not only pure and delicious, but it is the same ALL THROUGH.

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